DIV. OF FISHE

COMMERCIAL FISHERIES REVIEW

-SITY
HIGAN

MUSEUMS
LIBRARY

MUSEUM
SH
1
A47
vol. 26
no. 4

VOL. 26, NO. 4 APRIL 1964

UNITED STATES DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Commercial Fisheries
Washington, D.C.

UNITED STATES
DEPARTMENT OF THE INTERIOR
STEWART L. UDALL, SECRETARY

FISH AND WILDLIFE SERVICE
CLARENCE F. PAUTZKE, COMMISSIONER

BUREAU OF COMMERCIAL FISHERIES
DONALD L. McKERNAN, DIRECTOR

DIVISION OF RESOURCE DEVELOPMENT
RALPH C. BAKER, CHIEF

COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
G. A. Albano and H. Beasley, Assistant Editors

Address correspondence and requests to the: Chief, Fishery Market News Service, U. S. Bureau of Commercial Fisheries, Wyatt Bldg., Suite 611, 777 14th Street, NW., Washington, D. C. 20005.

Publication of material from sources outside the Bureau is not an endorsement. The Bureau is not responsible for the accuracy of facts, views, or opinions contained in material from outside sources.

Although the contents of the publication have not been copyrighted and may be reprinted freely, reference to the source is appreciated.

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 1, 1963.

5/31/68

CONTENTS

COVER: The M/V Kaho, exploratory fishing and gear research vessel operated on the Great Lakes by the U. S. Bureau of Commercial Fisheries. She is 65 feet long with an 18-foot beam, is powered by twin 150 hp. Diesel engines, and has a cruising speed of 12 knots. Her home port is Saugatuck, Mich. The name of the vessel derives from the Chippewa Indian word for "hunt."

Page
1 . .Lake Erie Fisheries Explorations, May-November 1960, by Ira A. Carr

Page
TRENDS AND DEVELOPMENTS:
Alaska:
9 . . Pink Salmon Workshop Meets in Juneau
9 . . Foreign Fishing Activity in Bering Sea
9 . . Alaska Fishery Landings, 1963
9 . . Bait Herring Fishing at Ketchikan
10 . . Herring Growth and Mortality Rates Analyzed
California:
10 . . Shrimp Resources off California Coast Surveyed
11 . . San Francisco Bay Investigations Continued
12 . . Growth and Life History of King Salmon Investigated
12 . . Pelagic Fish Population Survey Continued
12 . . Sea Otter Population Survey
Chesapeake Bay:
13 . . Research Conference Points Up Problem Areas
Federal Aid for Sport Fish and Wildlife Restoration:
14 . . Funds Apportioned to States, Fiscal Year 1964
Federal Purchases of Fishery Products:
Department of Defense Purchases, Fourth Quarter 1963:
14 . . October 1963

Page
TRENDS AND DEVELOPMENTS (Contd.):
Federal Purchases of Fishery Products (Contd.):
Department of Defense Purchases, Fourth Quarter 1963 (Contd.):
15 . . November and December 1963
16 . . January-December 1963 Summary
16 . . Veterans Administration Estimated Requirements for Canned Fish from 1964 Packs
Filleting Machine:
16 . . Yellow Perch Filleting Machine Now in Operation in Great Lakes Region
Fish Meal:
16 . . Plant Being Built in Great Lakes Region
Great Lakes:
17 . . Lake Trout Hatchery and Planting Program
17 . . Contract for Water Research in Lake Michigan Awarded by U. S. Public Health Service
Gulf Exploratory Fishery Program:
17 . . Shrimp and Menhaden Investigations in the Gulf of Mexico
18 . . Shrimp Gear Studies Continued
Gulf Fishery Investigations:
19 . . Shrimp Distribution Studies
Hawaii:
19 . . Skipjack Tuna Landings, January 1964

Contents continued page II.

CONTENTS (CONTINUED)

Page

TRENDS AND DEVELOPMENTS (Contd.):
Industrial Fishery Products:
U. S. Fish Meal and Solubles:
20 .. Production and Imports, 1962-63
U. S. Fish Meal, Oil, and Solubles:
20 .. Production, December 1963
20 .. Production by Areas, January 1964
21 .. Major Indicators for U. S. Supply, January 1964 and December 1963
Marketing:
21 .. Edible Fishery Products Prospects in 1964
National Fisheries Center:
22 .. Trained Dolphins Will be Featured
North Atlantic Fisheries Investigations:
23 .. Winter Distribution and Abundance of Groundfish Species Studied
North Pacific Exploratory Fishery Program:
25 .. Survey of Deep-Water Marine Fauna off Mouth of Columbia River Continued
Oceanography:
25 .. Deep-Diving Submarine for Woods Hole Oceanographic Institution
27 .. New Oceanographic Vessel for Biological Research Foundation
27 .. Puerto Rico Nuclear Center Marine Biology Program
28 .. Marine Bioacoustic Research May Aid Commercial Fisheries
Pollution:
29 .. Antipollution Dam will Improve Fish Runs in Sacramento River
Quality:
29 .. Guidelines for Troll Salmon Vessels
30 .. New York State Accepts USDI Inspection for Fish
Salmon:
30 .. Atlantic Restoration Studies
30 .. Massive Program to Introduce Fall Chinook Salmon Run in Upper Willamette River
Shrimp:
30 .. New Contracts Opened for Futures Trading in Frozen Shrimp at Chicago
32 .. United States Shrimp Supply Indicators, January 1964
Tuna:
32 .. Fishing Base in Palau Islands Planned by California Firm
United States Fisheries:
33 .. Commercial Fishery Landings, 1963
34 .. Fish Sticks and Portions, October-December 1963
U. S. Fishing Vessels:
Documentations Issued and Cancelled:
35 .. December 1963
35 .. 1963 with Comparisons
U. S. Foreign Trade:
36 .. Imports of Fish Meal and Scrap by Customs Districts, January-December 1963
36 .. Airborne Imports of Fishery Products, November 1963
37 .. Processed Edible Fishery Products, December 1963
Wholesale Prices:
38 .. Edible Fish and Shellfish, February 1964

Page

FOREIGN:
International:
Commission for Technical Cooperation in Africa:
40 .. Specialist Meeting on Crustaceans Held in Zanzibar
European Economic Community:
40 .. Tariff Quotas on Some Fishery Products Granted to Certain Member States
European Free Trade Association:
40 .. Tariff Reduction on Certain Fishery Products
Fishing Limits:
41 .. Scandinavian Countries Oppose Fishing Limits Proposal at European Fisheries Conference in London
Fish Meal:
42 .. Production and Exports for Selected Countries, January-November 1963
Food and Agriculture Organization:
42 .. Advisory Committee on Marine Resources Research Meets in Rome
42 .. World Oceans Can Yield More Food
43 .. Plans for Exploration of Marine Resources Urged by Director-General
43 .. World Fish Resources Must be More Wisely Managed
44 .. Fisheries Division Director Retires
44 .. New Director of Fisheries Division Appointed
44 .. Experts Seek Worldwide Standards for Fishery Products in International Trade
Great Lakes Fishery Commission:
45 .. Lake Trout Fishing Trends in Lake Superior
International Federation for the Progress of Food:
45 .. First Nutritional Congress to be Held in Paris
International Pacific Salmon Fisheries Commission:
45 .. Regulations for 1964 Sockeye Salmon Fishery in North Pacific
International Cooperative Investigations of the Tropical Atlantic:
46 .. Proposed Plans for EQUALANT III
47 .. Bureau of Commercial Fisheries Research Vessel Participates in EQUALANT III
North Pacific Fur Seal Commission:
48 .. Convenes in Moscow for Annual Meeting
Organization for Economic Cooperation and Development:
48 .. Fisheries Committee Meeting Held
Whaling:
49 .. Outlook for 1963/64 Antarctic Season
Australia:
50 .. Tuna Long-Lining Survey
Bulgaria:
51 .. Plans for Fishing Fleet
51 .. High-Seas Fisheries Development Aided by Soviets
Canada:
51 .. New Smoked Fish Regulations
52 .. British Columbia Shucked Oyster Production, 1963

Contents continued page III.

DEPOSITED BY THE
UNITED STATES OF AMERICA

CONTENTS (CONTINUED)

Page

FOREIGN (Contd.):
Chile:
52 .. Anchoveta Reappear off Northern Chile
Communist China:
52 .. Fisheries Trends
Denmark:
53 .. Fisheries Trends
55 .. Fishery Products Exports, January-September 1963
56 .. Vessel Stability Regulations and Recommendations
57 .. Danish Fishermen Protest Careless Disposal of Soviet Fishing Gear
57 .. Copenhagen Fisheries Trade Fair to be Held in September 1964
Honduras:
58 .. Fisheries Investment Opportunity
Iceland:
58 .. Fishermen Protest Ex-Vessel Groundfish Prices
58 .. Government Passes Bill to Aid Fishing Industry
Ireland:
59 .. Trout Farming Expanded
Israel:
59 .. Freezer-Trawler Operations Expanded
Japan:
59 .. Frozen Yellowfin Tuna Export Market Trends
59 .. Frozen Tuna Exports to Europe and Africa
60 .. Canners Developing Domestic Canned Tuna Sales
60 .. Exports of Canned Tuna, January-October 1963
61 .. More Tuna Vessels Move to New Caledonia Area of South Pacific
61 .. Tuna Transshipment Base in Costa Rica Planned
61 .. Bottomfish Vessel Operations for 1964 in Eastern Bering Sea Approved
61 .. New Salmon Factoryship to be Built by Fishing Firm
61 .. Fishery Developments in West Africa
61 .. Fish Meal Imports from Peru Approved
62 .. Consolidation of Whaling Operations in Brazil Being Studied by Two Japanese Fishing Firms
62 .. Whaling Bases in South America to be Surveyed by Whaling Firm
62 .. Decision on Sale Offer of Netherlands Whaling Factoryship Postponed
62 .. New Oceanographic Vessel Delivered
Republic of Korea:
62 .. Italian-French Contract to Build Fishing Vessels Modified
Mexico:
63 .. Large-Scale Expansion of Fisheries Industries Planned
64 .. First of Five Multiple-Use Fishing Vessels Received from Netherlands
Morocco:
65 .. New Tuna Cannery Being Built in Tangier
65 .. Canned Sardine Market Trends and Exports, 1963
Netherlands:
66 .. Fisheries Trends, 1963
66 .. Whaling Factoryship Offered for Sale to Japan

Page

FOREIGN (Contd.):
New Zealand:
66 .. Exploratory Fishing and Marine Research
Norway:
66 .. Exports of Canned Fishery Products, January-October 1963
67 .. Norwegian Firm to Establish Fish Stick Plant in New Bedford, Mass.
68 .. Antarctic Whale Oil Production, February 8, 1964
Panama:
68 .. Fisheries Trends, 1963, by Carlos A. Arosemena Lacayo
Peru:
70 .. Record Anchoveta Catch Forecast in 1964
71 .. Fisheries Catch Off in 1963
71 .. Peruvian Facilities of United States Fishery Firm to be Extended
Poland:
71 .. Fishing Base Reported Planned in Canary Islands
Portugal:
71 .. Fisheries Trends, January 1964
71 .. New Freezer-Trawlers Planned
Rumania:
72 .. Another Stern Trawler Ordered from Japan
St. Pierre:
72 .. Harbor and Processing Facilities Improved
Sudan:
72 .. Soviet Fishery Technicians Complete Survey of Red Sea Waters
Sweden:
72 .. Withdrawal from International Whaling Convention
Tanganyika:
73 .. Fishery Resources Surveyed by Japanese
U.S.S.R.:
73 .. Fishery Plans for 1964
73 .. Construction Started of Ninth Factoryship
73 .. Soviet Vessels Being Built in Japan
74 .. Soviet Interference with Danish Fishing Operations Claimed
74 .. Salmon Farming in Latvia
74 .. Siberian Fresh-Water Fisheries
United Kingdom:
75 .. Fishery Loans Interest Rates Revised
75 .. British Introduce New Reserve Auction First Sales Prices for Fish Landings
76 .. New Freezer-Trawler Launched
76 .. British Freezing Equipment Ordered for Korean Fish-Factoryship
FEDERAL ACTIONS:
Department of Commerce:
Bureau of the Census:
77 .. Economic Census of Commercial Fishing Industry Planned
Department of Health, Education, and Welfare:
Food and Drug Administration:
77 .. Amendment Requested in Standard of Identity for Canned Tuna
77 .. Public Hearing on Standards of Identity for Frozen Raw Breaded Shrimp
Interstate Commerce Commission:
78 .. Charge for Less-Than-Carload Shipments Approved
Small Business Administration:
78 .. Assistance for Economic Injury Suffered by Great Lakes Fishery Firms

Contents continued page IV.

CONTENTS (CONTINUED)

Page

FEDERAL ACTIONS (Contd.):
Treasury Department:
Bureau of Customs:
78 .. Groundfish Fillet Import Tariff-Rate Quota for 1964
79 .. Imports of "Herring Salad" Dutiable at 20 Percent Ad Valorem

Page

FEDERAL ACTIONS (Contd.):
79 .. Eighty-Eighth Congress (Second Session)
RECENT FISHERY PUBLICATIONS:
82 .. Fish and Wildlife Service Publications
85 .. Miscellaneous Publications

Created in 1849, the Department of the Interior--a department of conservation--is concerned with the management, conservation, and development of the Nation's water, fish, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.

Editorial Assistants: Ruth V. Keefe and Jean Zalevsky

Compositors: Alma Greene (Sr.); Dorothy Stein (Jr.)

* * * * *

Photograph Credits: Page by page, the following list gives the source or photographer for each photograph in this issue. Photographs on pages not mentioned were obtained from the Service's file and the photographers are unknown.

Pp. 25 (left) and 26--Office of Naval Research, Dept. of the Navy;
pp. 68-70--Carlos A. Arosemena Lacayo; p. 73--R. C. Naab.

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Price 60 cents (single copy). Subscription Price: $5.50 a year; $2 additional for foreign mailing.

COMMERCIAL FISHERIES REVIEW

April 1964 Washington, D. C. Vol. 26, No. 4

LAKE ERIE FISHERIES EXPLORATIONS, MAY-NOVEMBER 1960

By Ira A. Carr*

BACKGROUND

Exploratory fishing in the Great Lakes was started in the fall of 1958 by the U. S. Bureau of Commercial Fisheries. A sharp decline in availability of choice food fish and increased abundance of lower-priced, less-preferred species had forced many commercial fishermen out of business while others continued to operate at marginal or unprofitable levels. The immediate objective of the Bureau was to determine the most efficient methods for taking smelt (Osmerus mordax). Smelt were known to be abundant, but they could not be taken profitably by trap nets or pound nets, except during relatively short seasonal periods when excessive production caused market gluts.

In the 1958 explorations, small trap-net vessels were chartered for lampara-seine explorations. A larger trap-net boat was chartered and rigged for trawling and lampara-seine operations in 1959, and exploratory cruises were conducted from April through November (Sand and Gordon 1960). The trawl proved to be effective in taking commercial quantities of smelt in Lake Erie over extended periods and areas. The 1959 study also defined trawlable areas, seasonal depth distribution, and temperature preference of smelt, and provided valuable data on the relative availability of other species to the trawl. Limited seining was not successful.

Trawling explorations were continued in 1960 to define further the availability of smelt by season, depth, and area. The 1959 findings were substantiated and knowledge concerning the distribution and periods of availability of smelt were extended.

AREA OF OPERATION

Lake Erie, fourth largest of the five Great Lakes, has a surface area of 9,940 square miles. It is the shallowest of the lakes; the mean depth is 63.9 feet (Wright 1955). The northern part of Lake Erie lies in Canada, and the southern part lies in the United States (fig. 1).

Ontario borders the entire north shore of the lake and Michigan, Ohio, Pennsylvania, and New York share the west, south, and east shores. The lake may be divided into three distinct, yet broadly connected basins. The shallow western basin (maximum depth 48 feet) lies west of a line connecting Point Pelee on the north shore and Sandusky, Ohio, on the south shore. Much of that area is unsuitable for trawling because of outcroppings of bedrock, the many islands and shallow reefs, submerged net stakes, and an extensive commercial trap-net fishery. The large central basin (maximum depth 84 feet) covers almost two-thirds of the lake and was generally clear of obstacles to trawling in the areas fished. That basin is bordered on the east by a rock and sand bar that extends from the base of Long Point (north shore) to Erie, Pa. (south shore). The eastern basin is the deepest portion of the lake (maximum depth 210 feet). The bottom in most of this area is suited for trawling except for inshore depths less than about 8 fathoms ($\frac{1}{2}$ to $2\frac{1}{2}$ miles from shore).

*Formerly Fishery Methods and Equipment Specialist, Exploratory Fishing and Gear Research Base, U. S. Bureau of Commercial Fisheries, Ann Arbor, Mich.

U. S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sep. No. 702

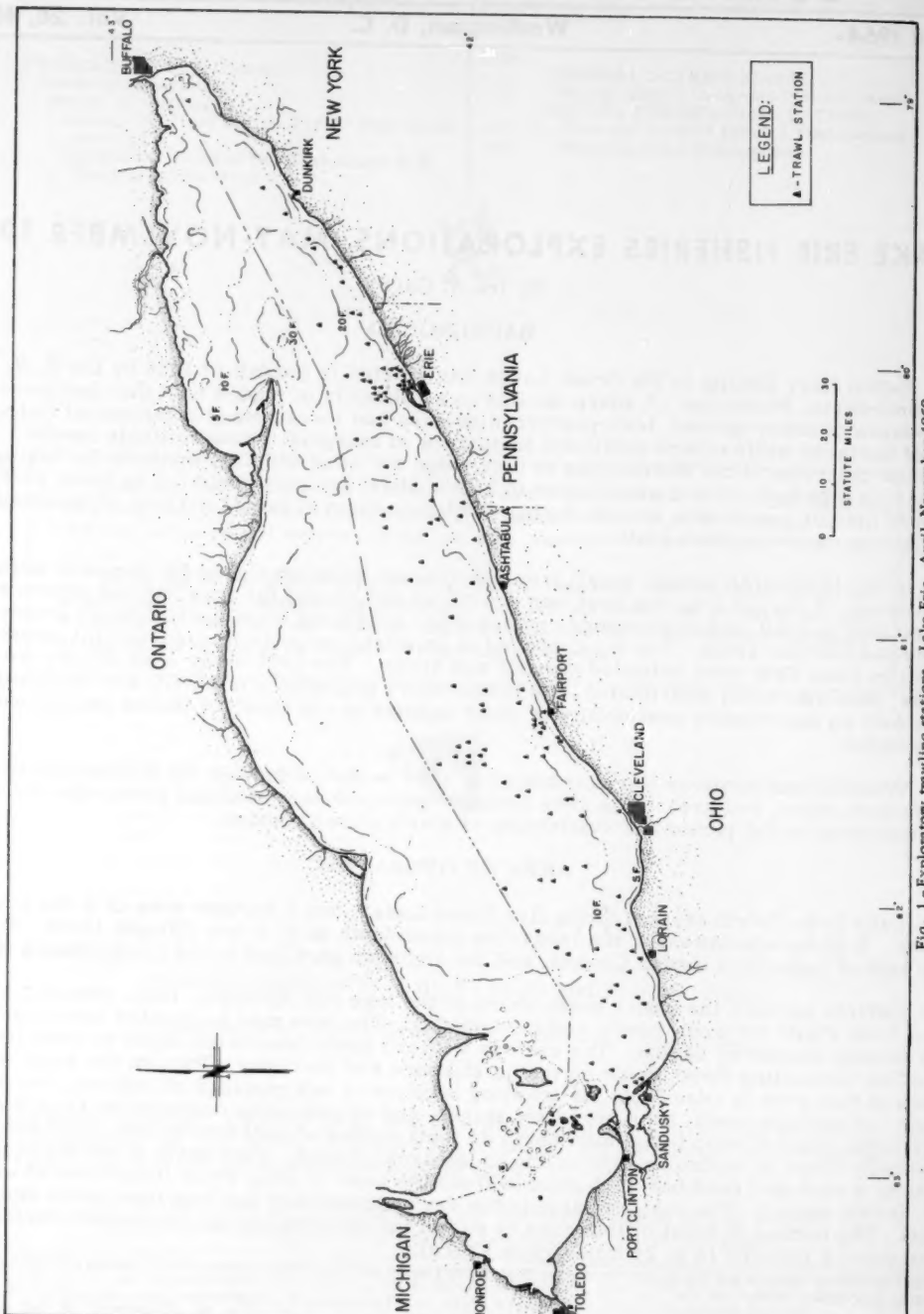


Fig. 1 - Exploratory trawling stations, Lake Erie, April-November 1960.

VESSEL, GEAR, AND METHODS

A large converted trap-net vessel, the M/V Active (fig. 2), first chartered and rigged for trawling in 1959, was purchased in 1960. This vessel was of wood construction, 50 feet long with a 14½-foot beam, and a draft of 4½ feet. After limited explorations in the spring, the vessel was repowered with a 147-hp. (continuous duty) Diesel engine with a 3:1 reduction gear, and a new deckhouse-pilothouse was added. Accessory equipment included a shallow-water echo-sounder with sufficient range and power to permit fish detection and bottom sounding at all depths. Continuous recordings were made while either cruising or fishing to locate and define bottom obstacles and evaluate the density and depth distribution of fish.

Fig. 2 - Exploratory fishing vessel Active after addition of a new deckhouse-pilothouse in 1960.

A standard 50-foot (headrope length) Gulf of Mexico 2-seam semi-balloon trawl was used for all but 5 drags. This trawl was made of 2½-inch, 18-thread cotton mesh in the wings and body and 1½-inch mesh in the intermediate section and cod end. The remaining 5 drags were made with a net of similar design, but with 4-inch mesh in wings and body. The bracket-type otter boards measured 2½ by 5 feet and weighed 200 pounds each. All drags were made with Pacific Coast-type dandyline gear with 60-foot bridles. The gear was set off the stern and the cod end was retrieved by a lazyline before the catch was hoisted aboard. Gear damage for the season was slight; only one trawl was torn beyond repair.

Most drags were 30 minutes long and held as closely as possible to a constant depth. Dragging speed averaged approximately 2½ miles per hour. Observations including the catch, weather, sea conditions, bottom conditions, and water temperature were recorded at each station. Surface temperatures were recorded with an electric temperature meter and surface-to-bottom temperature profiles with a bathythermograph. Fish were separated and weighed by species, and numbers of smelt per pound were determined.

FISHING RESULTS

Lake Erie's three basins provide different environments which greatly influence not only the composition of fish stocks, but also their seasonal distribution. Although fishing was scattered and limited in some areas (no fishing in some months), the results were sufficient to provide general information on local differences and seasonal changes in distribution, abundance, and availability of smelt to bottom trawls.

Catches during the 1959-60 explorations (see Sand and Gordon 1960 for 1959 data) show that smelt prefer cool water. Those in the western end of the lake move eastward into the deeper central and eastern basins as summer advances. The results also give strong evidence that smelt, although not heavily concentrated at any particular depth during May and June in the central basin, are present in sufficient quantity for commercial production. As the water warms, smelt prefer depths greater than 55 feet in the central basin and occasionally become heavily concentrated within a very narrow depth range. In late October, they again scatter, and by November were still available to trawls in commercial quantities but were not concentrated at any particular depth.

The seasonal bathymetric distribution of smelt in the eastern basin is essentially the same as that described for the central basin except that a deeper habitat is available and the smelt continue to move into deeper water during late summer and early fall. The extent of interchange of smelt between the central and eastern basins is not known. An easterly movement would be suspected during periods of oxygen depletion in the central basin,[1] but this point cannot be substantiated. It is apparent that water temperature is the principal factor in the distribution of smelt, but other factors such as food, oxygen, and spawning behavior influence distribution, especially when the temperature is not critical. The effects of currents and seiches may also be important.

Table 1 - Common and Scientific Names of Fish Taken in the 1960 Lake Erie Explorations

Common Name	Scientific Name
Alewife	Alosa pseudoharengus
American smelt	Osmerus mordax
Blue pike	Stizostedion vitreum glaucum
Burbot	Lota lota
Carp	Cyprinus carpio
Channel catfish	Ictalurus lacustris
Emerald shiner	Notropis atherinoides
Gizzard shad	Dorosoma cepedianum
Goldfish	Carassius auratus
Lake herring	Coregonus artedii
Sheepshead (fresh-water drum)	Aplodinotus grunniens
Spottail shiner	Notropis hudsonius
Stonecat	Noturus flavus
Trout-perch	Percopsis omiscomaycus
Yellow pike (walleye)	Stizostedion v. vitreum
White bass	Roccus chrysops
White crappie	Pomoxis annularis
White sucker	Catostomus commersoni
Whitefish	Coregonus clupeaformis
Yellow perch	Perca flavescens

The results of the 1960 work are discussed by basin. Tables 2-5, which summarize the fishing results by month, species, depth, and basin, follow the discussion. Two drags in a total of 129 were not used in the computations because of gear damage which undoubtedly affected the catches. Common names of fish are used throughout; the scientific names are listed in table 1.

WESTERN BASIN: Exploratory trawling totaled 19 drags in the western basin in May, June, August, and October. The smelt were scattered in May-June, but available in moderate quantities at nearly all depths (15-47 feet) fished (table 2). Smelt made up 86.4 percent of the catches which averaged 207 pounds an hour, and yellow perch accounted for the remaining 13.6 percent. Limited trawling in that basin in August and October caught few or no smelt and produced light catches of yellow perch, sheepshead, carp, and emerald shiners (tables 3 and 4). White bass, goldfish, gizzard shad, spottail shiners, channel catfish, alewives, trout-perch, and stonecats were each taken in amounts of less than 5 pounds per drag.

Table 2 - Summary of 1960 Lake Erie Exploratory Trawl Catches During May 18-June 15

Basin	Depth (Feet)	Number of Drags	Catch Rate (Pounds Per Hour) Range	Catch Rate (Pounds Per Hour) Average	Species Composition: Species	Species Composition: Percentage of Catch
Western	15-20	1	-	200	Smelt	100.0
					Other species	1/Tr.
	25-47	8	30-340	207	Yellow perch (over 8")	9.8
					Yellow perch (4" to 8")	5.4
					Smelt	84.7
					Other species	Tr.
Central	18-24	1	-	1,480	Yellow perch (over 8")	5.4
					Yellow perch (4" to 8")	67.6
					Smelt	27.0
					Other species	Tr.
	25-49	5	24-520	172	Yellow perch (over 8")	20.8
					Yellow perch (4" to 8")	16.2
					Smelt	64.0
					Other species	Tr.
	50-64	7	36-760	331	Yellow perch (over 8")	19.6
					Yellow perch (4" to 8")	11.5
					Smelt	68.9
					Other species	Tr.
Eastern	55	1	-	116	Smelt	100.0
					Other species	Tr.
	75	1	-	2/	Smelt	100.0

1/Tr., less than 0.05 percent.
2/Less than 5 pounds an hour.

1/State of Ohio and Bureau biologists reported vast areas of oxygen depletion near the bottom in the western and central basins during September of 1960 (Carr 1962).

CENTRAL BASIN: Exploratory trawling included a total of 64 drags during May, June, August, September, October, and November. Commercial quantities of smelt were available at various depths in that area during much of the period (tables 2-5). Exceptions were in early September and late November. In early September, extensive sounding transects and limited fishing revealed a lack of fish throughout the area. In 1959, however, excellent catches (up to 4,800 pounds an hour) were taken off Conneaut, Ohio, at 60-79 feet in September and

Table 3 - Summary of 1960 Lake Erie Exploratory Trawl Catches During August 3-September 15

Basin	Depth (Feet)	Number of Drags	Catch Rate (Pounds Per Hour)		Species Composition	
			Range	Average	Species	Percentage of Catch
Western	25-44	2	90-106	98	Yellow perch (4" to 8")	43.9
					Yellow perch (under 4")	5.1
					Sheepshead	28.6
					Other species	22.4
Central	50-74	11	90-504	255	Yellow perch (over 8")	2.4
					Yellow perch (4" to 8")	11.7
					Smelt	85.0
					Other species	0.9
	75-76	5	172-848	555	Yellow perch (over 8")	2.1
					Yellow perch (4" to 8")	6.1
					Smelt	90.1
					Other species	1.7
Eastern	15-24	1	2/	2/	Smelt	100.0
	50-74	11	0-160	42	Yellow perch (over 8")	8.3
					Yellow perch (4" to 8")	13.9
					Smelt	65.6
					Burbot	12.2
					Other species	1/Tr.
	76-80	4	80-2,450	1,310	Yellow perch (over 8"	0.5
					Smelt	98.5
					Burbot	1.0
					Other species	Tr.

1/Tr., less than 0.05 percent.
2/Less than 5 pounds an hour.

Table 4 - Summary of 1960 Lake Erie Exploratory Trawl Catches During October 4-16

Basin	Depth (Feet)	Number of Drags	Catch Rate (Pounds Per Hour)		Species Composition	
			Range	Average	Species	Percentage of Catch
Western	15-24	2	2/1-62	31	Carp	100.0
					Other species	1/Tr.
	25-49	6	2/1-64	20	Emerald shiners	95.0
					Carp	5.0
					Other species	Tr.
Central	44-49	1	-	122	Carp	100.0
					Other species	Tr.
	50-75	14	2/1-1,350	364	Yellow perch (4" to 8")	0.6
					Smelt	97.8
					Other species	1.6
Eastern	43-49	1	-	3/	Yellow perch (over 8")	50.0
					White bass	50.0
	50-74	4	2/1-8	2	Burbot	100.0
					Other species	Tr.
	75-99	8	82-940	474	Yellow perch	0.2
					Smelt	99.6
					White suckers	0.2
					Other species	Tr.
	127	1	-	380	Smelt	100.0

1/Tr., less than 0.05 percent.
2/Lower limit of range was less than 5 pounds an hour.
3/Less than 5 pounds an hour.

early October during commercial-type fishing. In early October 1960, smelt were heavily concentrated within a narrow depth range (72-75 feet). The average catch rate for 6 drags at those depths was 890 pounds an hour. Few or no smelt were taken at lesser depths. In late November, smelt apparently were scattered and catches were smaller (up to 330 pounds per hour). Best catches of smelt by month in 1960 from that basin were as follows: May 375-400 pounds an hour at 52-53 feet; June 400 pounds an hour at 18-22 feet and 180-240 pounds an

hour at 58-64 feet; August 400-848 pounds and hour at 65-76 feet; October 244-840 pounds an hour at 72-73 feet and 1,260-1,320 pounds an hour at 74-75 feet; November 214-330 pounds an hour at 40-45 feet.

Good catches of yellow perch were taken occasionally in the central basin. The proportion of salable-size perch (over 8 inches) varied from 8 to 80 percent. This percentage could be raised considerably by the use of larger cod-end mesh. Best average catches by month were at the following depths: May 250-360 pounds an hour at 52-53 feet; June 1,080 pounds an hour at 18-22 feet; August 140 pounds an hour at 50 feet; September 180 pounds an hour at 60 feet.

The following species were each taken from that basin in amounts of 5 pounds or less per drag: white bass, burbot, emerald shiners, spottail shiners, lake herring, whitefish, trout-perch, sheepshead, alewives, gizzard shad, and white crappie.

Fig. 3 - A good catch of smelt taken off Erie, Pa., in September 1960 by the M/V Active.

EASTERN BASIN: Forty-four drags were completed in that basin--only 2 before August. Catches in August were small at all depths fished (15-64 feet). In early September, however, the largest smelt catch (2,450 pounds per hour) of the 1960 fishing was taken at 78 feet off Erie, Pa. This concentration of smelt was narrowly distributed and could not be located when the area was revisited several days later. Catches were light, up to 180 pounds per hour, at lesser depths in September. Good smelt catches (up to 900 pounds a hour) were made at 60-75 feet, and catches of up to 1,500 pounds an hour were taken at greater depths (82-85 feet) in September of 1959 (Sand and Gordon 1960).

Catches of smelt were again good in October 1960 at depths greater than 72 feet: 364 pounds an hour at 73-78 feet; 340-360 pounds an hour at 82-90 feet; 640-940 pounds an hour at 90-98 feet; 380 pounds an hour at 127 feet. Fair coverage of depths from 25 to 98 feet in November produced smelt catches ranging from only a few pounds to 136 pounds per hour. At no time during 1960 did fishing in the eastern basin yield commercial quantities of smelt at depths shallower than 60 feet. Yellow perch were not taken in commercial quantities in the eastern basin.

Table 5 - Summary of 1960 Lake Erie Exploratory Trawl Catches During November 7-22

Basin	Depth (Feet)	Number of Drags	Catch Rate (Pounds Per Hour)		Species Composition	
			Range	Average	Species	Percentage of Catch
Central	6-24	3	54-138	108	Smelt Burbot Other species	92.9 5.5 1.6
	25-49	7	6-330	140	Smelt Burbot Gizzard shad Other species	96.1 1.2 2.0 0.7
	50-74	10	2/1-210	62	Smelt Carp Alewife Other species	81.6 10.7 6.1 1.6
Eastern	25-49	6	2/1-136	23	Smelt Other species	100.0 1/Tr.
	50-74	4	12-122	64	Smelt Other species	100.0 Tr.
	75-98	2	2/1-20	10	Smelt Other species	100.0 Tr.

1/Tr., less than 0.05 percent.
2/Lower limit if range was less than 5 pounds an hour.

Other species that collectively amounted to only 1.2 percent of the total catch were alewives, blue pike, stonecat, gizzard shad, trout-perch, white bass, emerald shiners, burbot, lake herring, yellow pike, and white suckers.

Table 6 - Summarization of 1959-60 Lake Erie Smelt Trawling Explorations by Cruise for M/V Active

Date	Basin	Fishing Depth (Fathoms)	Number of Drags	Average Time Per Drag (Minutes)	Catch Rate (Pounds Per Hour)	
					Range	Average
1959						
April 21-May 13	Western	2-6	14	25	0-50	15
June 2-24	Central	2-13	45	30	0-600	195
July 6-23	Central	6-13	66	45	0-500	137
August 3-17	Central Eastern	5-25	31	34	0-500	97
Aug. 27-Sept. 6	Central Eastern	5-25	29	34	0-1,200	250
Sept. 22-Oct. 8	Central	9-13	39	60	0-4,800	1/1,462
October 20-27	Central	5-13	14	29	0-60	15
November 9-23	Western	2-12	16	33	0-20	6
1960						
May 18-28	Western Central	2-10	16	28	0-400	202
June 6-16	Western Central Eastern	3-13	10	27	0-400	145
August 3-19	Western Central Eastern	2.5-12.5	21	31	0-790	244
Aug. 30-Sept. 23	Central Eastern	8-13	14	23	0-2,450	401
October 4-19	Western Central Eastern	2.5-16.5	37	28	0-1,320	247
November 7-22	Central	1-17	32	32	0-260	70

1/This high average resulted from high-volume commercial-type fishing on heavily concentrated smelt. All other average catches are the result of random exploratory fishing assessments and are not a true indication of potential commercial production rates.

CONCLUSION

The 1960 explorations substantiated the 1959 findings that smelt can be taken on a commercial scale with trawls in the central and eastern basins of Lake Erie throughout most of the fishing season (table 6), and extended knowledge concerning seasonal distribution and availability to trawls of smelt and other species. Temperature plays an important role in the seasonal distribution of smelt. At times, smelt were concentrated within a very narrow depth range; consequently, it is recommended that commercial vessels be equipped with good electronic fish-finders for this method of fishing. Data indicate that when smelt are concentrated in commercial quantities, other species are scarce; thus sorting offers no problem.

APPENDIX

A detailed fishing log, showing geographic position, depth, date, catch, and related data for each drag is available as an appendix to the reprint of this article. Write for Separate No. 702, which includes "Table 7 - Fishing Log, Trawl Stations, 1960, M/V Active, Lake Erie."

LITERATURE CITED

CARR, JOHN F.
1962. Dissolved Oxygen in Lake Erie, Past and Present. Proceedings of the Fifth Conference on Great Lakes Research, Great Lakes Research Division, University of Michigan, Publication no. 9, pp. 1-14.

GORDON, WILLIAM G., and KEITH D. BROUILLARD
1961. Great Lakes Trawler Conversion. U. S. Fish and Wildlife Service, Fishery Leaflet 510, 15 pp.

HATCHER, HARLAN
1945. Lake Erie. Bobbs-Merrill Co., New York, New York, 416 pp.

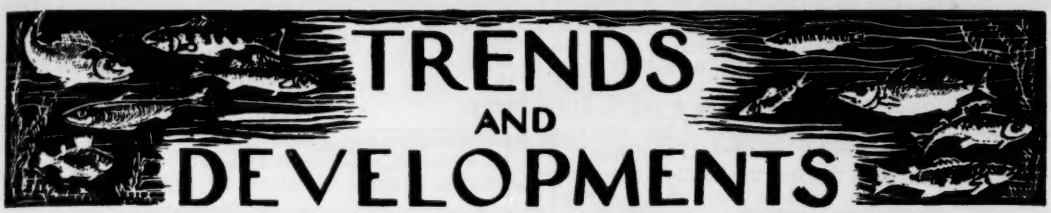
SAND, REIDAR F., and WILLIAM G. GORDON:
1960. Exploratory Fishing in Lake Erie, September 1958-November 1959. Commercial Fisheries Review, vol. 22, no. 6 (June), pp. 1-12. (Also Separate No. 590.)

WRIGHT, STILLMAN
1955. Limnological Survey of Western Lake Erie. U. S. Fish and Wildlife Service, Special Scientific Report: Fisheries No. 139, 341 pp.

COD CROSSES THE ATLANTIC

Scientists at the Lowestoft Fisheries Laboratory have reported a remarkable migration by a cod. The fish was tagged in the North Sea in June 1957 and was recaptured by a Polish factory trawler on the northeastern slope of the Grand Bank, Newfoundland, in December 1961. During its $4\frac{1}{2}$ years of freedom it had grown from $22\frac{1}{2}$ to $29\frac{1}{2}$ inches.

Although it is generally accepted that cod are capable of crossing deep-water barriers between fishing banks, this is probably the first record of a complete crossing of the North Atlantic by this species. (Scottish Fisheries Bulletin No. 20, December 1963.)



Alaska

PINK SALMON WORKSHOP MEETS IN JUNEAU:

A one-week Pink Salmon Workshop was held at Juneau, Alaska, this past January. More than 75 management and research biologists attended the workshop meetings to discuss the present status and future needs of pink salmon research on the west coast of North America. Agencies represented were the Alaska Department of Fish and Game, Canadian Department of Fisheries, Washington Department of Fisheries, Fisheries Research Board of Canada (Nanaimo), Fisheries Research Institute, and the Bureau's Auke Lake and Montlake Laboratories.

Prediction of the magnitude of pink salmon runs was emphatically stressed by management biologists as their most important research requirement with the need to determine optimum escapement levels a close second. Research biologists reported on progress in the problems of migrations, optimum spawning escapement, and discovery of mortality factors in stream, estuary, and ocean environments. The status of natural and artificial spawning channel studies was also discussed. The smoltlike development of pink fry in the estuary and coastal marine waters was an interesting concept discussed by Nanaimo and Auke Bay biologists, suggesting further avenues of study towards solving problems of pink salmon growth and abundance. It was concurred that a breakthrough is imminent in estuarine research.

* * * * *

FOREIGN FISHING ACTIVITY IN BERING SEA:

The Soviet fleets fishing in the eastern Bering Sea continued to build up during January, but Japanese fishing activities remained at a low level.

More than 150 Soviet trawlers and associated support vessels were believed to be fishing in the Bering Sea. Major emphasis was reported to be on herring and, to a lesser degree, flatfish and rockfish.

The Japanese shrimp factoryship Chichibu Maru and her accompanying trawlers returned to Japan in late December 1963. In January two stern trawlers of the Akebono Maru type were reported fishing in the eastern Bering Sea within the Area 3B North Triangle regulatory zone.

* * * * *

ALASKA FISHERY LANDINGS, 1963:

Dungeness crab and king crab landings were at a record level in 1963 in Alaska. However, 1963 landings of all other important fishery products were down from 1962, according to preliminary statistics.

Alaska Commercial Fishery Landings, 1/ 1963 with Comparisons

Species	1/ 1963	1962	Percentage Change From 1962
	(1,000 Lbs.)		
Sablefish	1,100	1,400	-21
Salmon:			
King	8,000	8,700	- 9
Chum	33,000	57,700	-43
Pink	120,000	143,300	-16
Red	34,000	52,900	-36
Coho	13,000	15,200	-14
Total	208,000	277,800	-25
Herring	31,000	33,900	- 9
Clams	400	700	-43
Crabs:			
Dungeness	11,800	9,000	+31
King	77,000	52,800	+46
Shrimp	14,400	16,900	-15

1/ Preliminary.

* * * * *

BAIT HERRING FISHING AT KETCHIKAN:

The annual harvest of bait herring at Ketchikan was under way during January, with deliveries made to three cold-storage plants. Those landings were principally from Ward Cove, a traditional herring fishing ground near Ketchikan. By the end of January three vessels had landed more than 1.5 million pounds of herring. Fishing was expected to continue through February to provide bait for king crab and halibut fishermen during the 1964 fishing season.

* * * * *

HERRING GROWTH AND MORTALITY RATES ANALYZED:

Analyses of the past 30 years of herring statistics show that apparently mortality rates are much lower for fish that are 8 years old and over than for younger fish. Also, herring caught from the outside waters of Southeast Alaska weigh less during the early years of maturity than do fish taken from the inner waters. Frequency distributions of sizes for different age groups show a persistent bimodality for both inner and outer herring strongly suggesting different groups or stocks within each population. Tests of the data from thousands of samples are under way to determine the extent and significance of the differences in mortality and weights.

California

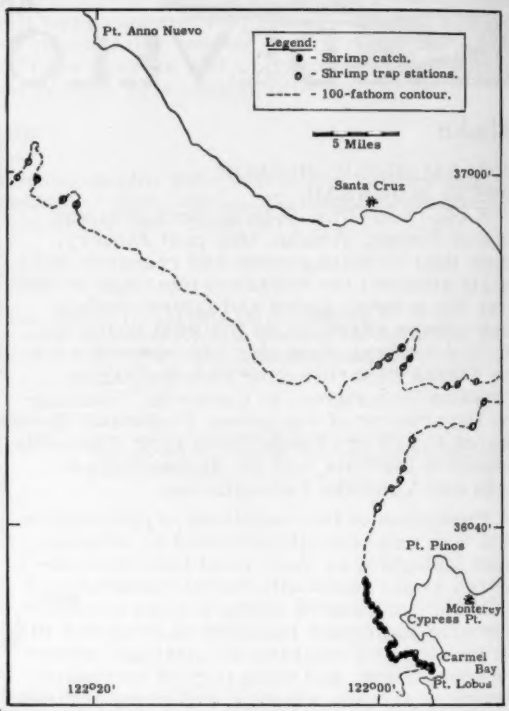
SHRIMP RESOURCES OFF CALIFORNIA COAST SURVEYED:

M/V "Alaska" Cruise 64-A-1-Prawn (January 8-30, 1964): The objectives of this cruise by the California Department of Fish and Game research vessel Alaska off the California coast between Pt. Anno Nuevo and Purissima Point were to: (1) conduct exploratory fishing for spotted shrimp (Pandalus platyceros), (2) determine size, sex, and weight of shrimp from different areas, and (3) make bathythermograph casts to obtain bottom temperatures at trap stations.

A total of 75 shrimp trap sets were made from Pt. Anno Nuevo to Anacapa Island (45 sets were with cylindrical traps and 30 with rectangular traps). A set consisted of 6 to 8 traps attached by 1-fathom gangions at 10-fathom intervals along the mainline. Nearly all sets were at right angles to contours of submarine canyons in depths of 70 to 115 fathoms.

Traps were paid out in a straight line as the vessel moved from deep to shallow soundings over the canyon slope. After the last trap was shot, 120 fathoms of free line was laid out toward shore. One hundred pounds of anchor chain was then attached to the line and marked with a buoy.

The cylindrical traps used were 42 inches long and 22 inches in diameter, and rectangular traps 15 by 15 by 30 inches. All were made of $\frac{3}{8}$-inch reinforced steel rod covered with $1\frac{1}{2}$-inch nylon mesh. Mesh entrance tunnels were tapered to $3\frac{1}{4}$ inches. Each trap had an entrance tunnel extending from each end toward the center, about one-third the length of the trap.



Shows part of Cruise 64-A-1 of the M/V Alaska (Jan. 8-30, 1964).

The only areas producing shrimp in appreciable numbers were off Cypress Pt. and Carmel Bay. In all, a total of 2,533 shrimp weighing 317 pounds were caught. Highest catch rates were 2.8 pounds-per-trap for a set of 8 cylindrical traps, and 2.6 pounds-per-trap for a set of 7 rectangular traps.

Average shrimp catches in rectangular and cylindrical traps were:

Average Shrimp Catches during Cruise 64-A-1

Type of Trap	Pounds	Number of Shrimp	Heads-on Shrimp Count Per Pound
	(Per Trap)		
Rectangular	1.3	9.3	7.2
Cylindrical	1.8	14.9	8.3
Total	1.6	13.2	8.2

The heads-on count of shrimp caught ranged from 6.3 to 13.2 per pound. Mean carapace lengths for males, transitionals, and females

were 37.7, 42.0, and 47.5 millimeters (about 1.5, 1.7, 2.1 inches), respectively. Of those, 25 percent were males, 12 percent transitionals and 63 percent females. More than 98 percent of the females were carrying eggs.

Five trap sets made along the canyons near Pt. Anno Nuevo yielded negligible catches as did 15 sets made in Monterey Canyon between Pt. Pinnos and Santa Cruz.

From Pt. Sur to Lopez Pt., 15 sets were made with little success. One trap near Partington Pt. yielded 2 pounds but the area as a whole was unproductive. Ten sets made from Pt. Piedras Blancas to Purissima Pt. yielded only 3 shrimp.

At Anacapa Island only the deepest of 5 trap sets caught shrimp just 2.5 pounds.

Only one bathythermograph cast was made during the cruise because of a winch breakdown. The cast was made off Pt. Lobos and the temperature was 8.9° C. (48° F.) at 120 fathoms. Surface temperature was 12.1° C. (53.8° F.).

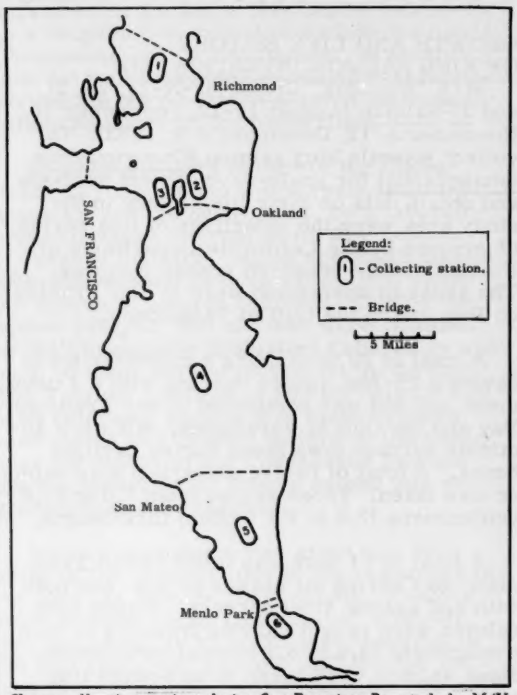
Incidental fish catches were light, mostly sablefish (Anoplopoma fimbria) and filamented sculpins (Icelinus filamentosus). Other fish included juvenile rockfishes, cuskeels, brotulids, flatfish, and hagfish. Invertebrates consisted mostly of octopi, hermit crabs, nudibranchs, starfish, sea urchins, and crabs.

* * * * *

SAN FRANCISCO BAY INVESTIGATIONS CONTINUED:

M/V "Nautilus" Cruise 63-N3i-k S. F. Bay Study (Fourth Quarter 1963): The monthly study of San Francisco Bay south of San Pablo Bay by the California Department of Fish and Game research vessel Nautilus was continued during the fourth quarter of 1963. Short cruises were made during October, November, and December to: (1) collect fish and invertebrates routinely at six stations to determine distribution and relative abundance under prevailing environmental conditions, (2) define ecological zones of the bay, and (3) determine the food of the principal fish and its availability.

At each station, a square-mouthed midwater trawl 25 feet on a side was towed for 20 minutes or more at the surface. Each of the 6 stations was also sampled by a 15- to 20-minute bottom tow with a beam-trawl net 10 feet wide and 4 feet high with 1-inch mesh. To avoid overloading the net with dead shells or mud, two 10-minute tows were made on the soft bottoms encountered at Stations 1, 4, 5, and 6.



Shows collecting stations during San Francisco Bay study by M/V Nautilus.

Two species of fish were added to the bay collection list with the capture of 4 turbots (Pleuronichthys coenosus) at Station 4, and a dwarf perch (Micrometus minimus) at Station 1. A total of 54 species of fish were taken in 1963 during the monthly sampling of San Francisco Bay which began in February. Plans call for the study to be continued through 1964. A series of samples through several seasons will be required to determine relative abundance of species from year to year.

October and November 1963 water temperatures were within the range 11.9° to 15.6° C. (53.4° to 60.1° F.) recorded on previous cruises. However, the December 1963 mean temperature of 9.4° C. (48.9° F.) was below the lowest monthly mean recorded for other months in 1963. In the deeper water, the bottom temperature was as high or higher than the surface temperature.

Salinities were between the 13.9°/oo to 34.1°/oo limits measured earlier in 1963.

Note: See Commercial Fisheries Review, Dec. 1963 p. 20, and Sept. 1963 p. 15.

* * * * *

GROWTH AND LIFE HISTORY OF KING SALMON INVESTIGATED:

M/V "Nautilus" Cruise 63-N-2g, 2h, 2i, and 2j-Salmon (August 10-12, September 10, November 4-11, December 8-9, 1963): To collect juvenile king salmon (Oncorhynchus tshawytscha) for scale-development analysis and obtain data on their life history in the study area were the objectives of this series of cruises by the California Department of Fish and Game research vessel Nautilus. The areas of operations were in San Francisco Bay and in the Gulf of Farallones.

A total of 98 tows using a midwater trawl having a 25-foot square opening with a ½-inch mesh cod end was completed in San Franciso Bay and the Gulf of Farallones. All were 20-minute surface tows made during daylight hours. A total of twelve unmarked king salmon was taken. Those varied from 7.0 to 15.8 centimeters (2.8 to 6.2 inches) fork-length.

A total of 71 tows was made in San Francisco Bay during all phases of tide, and both with and against tidal current. Eleven king salmon were caught varying from 9.2 to 15.8 centimeters (3.6 to 6.2 inches) fork-length. Most salmon were taken in or around tide rips. But difficulty in keeping the net set in those areas made it impossible to fish them most of the time. Other species taken in the Bay were anchovy, jacksmelt, American shad, surfsmelt, herring, dogfish, soupfin shark, brown rockfish, and threadfin shad.

Twenty-seven tows were made in the Gulf of Farallones. One king salmon 7.0 centimeters (2.8 inches) fork-length was caught. Other species taken in the Gulf were herring, jacksmelt, tomcod, and sandlance.

* * * * *

PELAGIC FISH POPULATION SURVEY CONTINUED:

Airplane Spotting Flight 64-1-Pelagic Fish (January 20-23, 1964): To determine the inshore distribution and abundance of pelagic fish schools, the inshore area from Point Anno Nuevo to the United States-Mexican Border was surveyed from the air by the California Department of Fish and Game's Cessna "182" 9042T.

On January 20, the area from Point Vicente to the United States-Mexico Border was scouted, but scouting conditions were poor between Point Vicente and Dana Point. The sky was heavily overcast and the water was turbid from the previous day's storm. South of Dana Point, scouting conditions were excellent, but few fish schools were sighted. A total of 25 small schools of northern anchovies (Engraulis mordax) were off Camp Pendleton, where a large school group was observed in December 1963. California gray whales (Eschrichtius glaucus) were quite common from Camp Pendleton south.

The flight scheduled for January 21 was cancelled due to bad weather.

Point Vicente to Point Buchon was scouted on January 22. Weather conditions were variable. Good flight weather prevailed south of Jalama Park, but rain and sleet squalls were frequent to the north. One large anchovy school was sighted on the surface in a rough sea near Point Vicente. This was unusual because fish generally stay deep when such turbulence exists.

On January 23, Point Anno Nuevo to Point Dume was scouted. On that day scouting conditions were fair but intermittent cloud formations cast dark shadows on the water's surface causing many false sightings, requiring additional scouting time to verify. Two unidentified schools were seen, one each, near Point Lopez and Cape San Martin, which behaved like Pacific sardines (Sardinops caeruleus) but they were too deep for positive identification. Numerous gray whales were also seen between Point Buchon and Point Sur.

Note: See Commercial Fisheries Review, March 1964 p. 10.

* * * * *

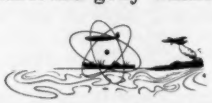
SEA OTTER POPULATION SURVEY:

Airplane Spotting Flight 64-2-Special Project (January 28-29, 1964): To obtain a visual and photographic count of California sea otters (Enhydra lutris nereis), the Channel Islands and the inshore area from Santa Barbara to Pigeon Point were surveyed from the air by the California Department of Fish and Game's Beechcraft N5614D. California sea otters are thought to range from Cambria to Anno Nuevo Island.

No sea otters were observed at any of the Channel Islands on January 28, although excellent visibility prevailed at the altitudes flown (30 to 150 feet) during the census at all 7 islands.

The inshore area from Santa Barbara to a point about halfway between Anno Nuevo Island and Half Moon Bay was surveyed on January 29. Excellent visibility prevailed at the altitudes flown (generally between 100 and 150 feet, occasionally as low as 30 feet). Sea otters were observed only between Cambria and Monterey Bay. Within that area, 236 sea otters were widely scattered in and near kelp beds; the largest group contained only 15 animals. Decreasing visibility and rain were encountered a few miles north of Anno Nuevo Island and the census was concluded at that point. Photographs were taken with an aerial camera of all sizable groups of sea otters; small groups and single individuals were not photographed.

Two California gray whales were also observed.



Chesapeake Bay

RESEARCH CONFERENCE POINTS UP PROBLEM AREAS:

A joint conference on research problems of the Chesapeake Bay and its tributaries was held at Solomons, Md., on February 7, 1964, by staffs of the marine laboratories of the Virginia Institute of Marine Science and the Natural Resources Institute, University of Maryland.

The laboratories of both Institutes have often joined forces on research projects but expressed further interest in increasing their cooperation and singled out several fields where joint efforts might be of special benefit. Chief among these was the decision by the group to develop a joint research program on the blue crab, which migrates freely between Maryland and Virginia and provides a resource of significant importance to both states. Two scientists, one from each laboratory, were requested to complete detailed planning of the research necessary for effective management of the blue crab.

At the conference, considerable discussion was given to the possibility of surveying temperature conditions throughout Chesapeake Bay, since they trigger the migrations of marine animals, spawning, and many other important activities. The conferees hoped that Virginia's use of airplane to scan surface temperatures in the lower Bay can be extended as a cooperative project to include the upper Chesapeake and its tributaries. In addition, interest was expressed in adding careful observations from boats at a set of stations coincidentally with the plane flight.

Because the deep waters of the Chesapeake Bay tend to move upstream from the ocean toward the headwaters, both laboratories expressed interest in further release of "seabed drifters," which are small plastic umbrella-shaped devices which drift along the bottom of natural currents. During the winter 1962/63, 300 of these were released by the Chesapeake Biological Laboratory and most of them showed movement up the Bay. The Virginia Institute of Marine Science has been releasing about 500 of those drifters each month in a careful pattern in the ocean near the mouth of the Chesapeake Bay and the two laboratories plan to extend this program into the Chesapeake.

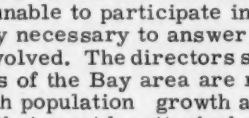
Serious discussion was given to a joint study of the croaker, one of the resources of the Bay now in very short supply. Reports from present research indicated, however, that the supply is so small that research in the Bay itself will be very difficult for the next few years. Biologists from the two stations agree that Maryland and Virginia both need to learn more about the croakers now present in North Carolina, since they may affect the supply in the Chesapeake. A joint project may be developed at that location. Additional studies of spot and other indigenous Bay fish species were considered and may develop at a later date.

The Potomac River was a special point of interest, since both laboratories are advisers to the Potomac River Fisheries Commission and because the river is shared by the two states. Particular emphasis was given to the need for evaluating all the present knowledge of that area and to the urgent necessity for research on the enormous amount of waste material flowing into the upper Potomac from the Washington metropolitan region. A joint study is under discussion.

The problems involved in oyster management in the Potomac River were discussed

by members of both groups who will make cooperative recommendations to the Potomac Fisheries Commission.

The directors of both Institutes commented on the high expense of research on the waters which cover about 20 percent of Maryland, a large part of Virginia and extend out to the edge of the Continental Shelf. At the present time, the Chesapeake Biological Laboratory of Maryland is without a research vessel and completely unable to participate in the extensive study necessary to answer each of the questions involved. The directors stressed that the problems of the Bay area are rapidly increasing with population growth and industrialization that must be attacked on a bay-wide basis, since fish and other organisms are highly migratory. The expense of such operations will continue to increase. (Natural Resources Institute, University of Maryland, February 10, 1964.)



Federal Aid for Sport Fish and Wildlife Restoration

FUNDS APPORTIONED TO STATES, FISCAL YEAR 1964:

A final distribution of $10.2 million in Federal Aid funds for fish and wildlife restoration during fiscal year 1964 has been made to the 50 States, Guam, Puerto Rico, and the Virgin Islands, the U. S. Department of the Interior announced on January 27, 1964. Those funds are in addition to the $12.6 million released on May 15, 1963, making a total of more than $22.8 million available for fiscal year 1964, Secretary of the Interior Stewart L. Udall said. Of the total of $22,828,172.62 released for fiscal year 1964, $16,673,076 is for wildlife restoration and $6,155,099 is for fish projects.

The Interior Secretary said funds apportioned to the States will be used for fish and wildlife restoration projects involving the purchase of land, improvement of areas of land or water for fish and wildlife, and to conduct research for the restoration and perpetuation of those resources.

Under the Federal Aid program, the States initiate the projects and, if they meet the requirements established by the Department of the Interior, the funds allocated are used to reimburse the States up to 75 percent of the cost of completed projects.

The amount allocated for fiscal year 1964 under the Federal Aid in fish and wildlife restoration programs is over $3.5 million more than the $19,170,000 apportioned in fiscal year 1963.

Apportionment for Federal Aid in Fish and Wildlife Restoration, Fiscal Year 1964

State	Fish Projects	Wildlife Restoration
Alabama	$ 107,550.49	$ 316,230.29
Alaska	306,254.95	781,394.32
Arizona	117,544.90	357,468.64
Arkansas	115,584.20	284,832.95
California	306,254.95	774,822.87
Colorado	144,835.05	375,321.59
Connecticut	61,250.99	78,139.43
Delaware	61,250.99	78,139.43
Florida	132,179.75	248,215.44
Georgia	127,672.61	291,788.62
Hawaii	61,250.99	78,139.43
Idaho	100,442.20	312,449.38
Illinois	160,497.13	427,040.41
Indiana	154,324.35	459,266.56
Iowa	110,643.87	329,491.88
Kansas	104,961.83	330,860.17
Kentucky	82,607.26	243,061.23
Louisiana	74,720.41	274,207.31
Maine	64,125.89	189,676.16
Maryland	61,250.99	122,599.70
Massachusetts	61,250.99	91,443.70
Michigan	226,865.98	636,339.70
Minnesota	280,578.89	444,646.13
Mississippi	83,045.53	239,424.37
Missouri	167,260.20	376,868.69
Montana	145,295.75	489,907.40
Nebraska	92,850.58	308,285.86
Nevada	89,786.38	302,022.50
New Hampshire	61,250.99	78,139.43
New Jersey	61,250.99	134,953.82
New Mexico	111,181.00	370,205.68
New York	162,646.41	544,657.61
North Carolina	94,168.71	363,248.42
North Dakota	61,250.99	225,908.69
Ohio	171,549.98	486,768.06
Oklahoma	128,637.61	301,780.82
Oregon	144,196.07	428,686.71
Pennsylvania	135,305.83	708,181.50
Rhode Island	61,250.99	78,139.43
South Carolina	70,093.49	181,259.68
South Dakota	80,333.57	316,145.06
Tennessee	140,630.45	365,858.02
Texas	306,254.95	781,394.32
Utah	90,094.52	319,246.78
Vermont	61,250.99	81,858.26
Virginia	85,496.52	318,114.99
Washington	114,880.94	351,134.61
West Virginia	61,250.99	189,281.62
Wisconsin	227,491.97	461,201.12
Wyoming	92,493.02	312,627.75
Guam	10,000.00	10,000.00
Puerto Rico	10,000.00	10,000.00
Virgin Islands	10,000.00	10,000.00
Totals	$6,155,099.08	$16,673,076.54

Note: See Commercial Fisheries Review, July 1963 p. 36, January 1963 p. 27.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, FOURTH QUARTER 1963:

October 1963: FRESH AND FROZEN: For the use of the Armed Forces under the Depart-

ment of Defense, slightly less fresh and frozen fishery products were purchased in October 1963 than in the previous month. (The purchases were made by the Defense Subsistence Supply Centers.) The decline was 1.9 percent in quantity and 1.7 percent in value. In October 1963, leading items were purchased in the following quantities (average price in cents per pound shown in parentheses): shrimp 663,080 pounds (78); scallops 101,100 pounds (56); oysters 101,502 pounds (96); ocean perch fillets 246,190 pounds (32); flounder fillets 225,000 pounds (27); and haddock fillets 182,800 pounds (35). The October purchases also included substantial quantities of halibut, cod fillets, and mackerel.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, October 1963 with Comparisons

QUANTITY				VALUE			
October		Jan.-Oct.		October		Jan.-Oct.	
1963	1962	1963	1962	1963	1962	1963	1962
(1,000 Lbs.)				($1,000)			
1,817	2,149	19,490	20,083	975	1,585	10,917	12,560

CANNED: Large purchases of canned salmon for the Armed Forces were made in October 1963. Previous purchases of canned salmon in 1963 had been very light and total

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, October 1963 with Comparisons

Product	QUANTITY				VALUE			
	October		Jan.-Oct.		October		Jan.-Oct.	
	1963	1962	1963	1962	1963	1962	1963	1962
	(1,000 Lbs.)				($1,000)			
Tuna	281	138	2,992	3,846	123	69	1,420	2,131
Salmon	1,448	2,265	1,478	3,281	875	1,150	895	1,788
Sardine	24	20	399	85	8	8	158	39

purchases of the 3 principal canned fishery products (tuna, salmon, and sardines) in the first 10 months of 1963 were down 32.5 percent in quantity and 37.5 percent in value from those in the same period of 1962 due to lower purchases of canned salmon and tuna.

* * * * *

November 1963: FRESH AND FROZEN: Purchases of fresh and frozen fishery products for the Armed Forces in November 1963 were considerably above those in October 1963 due mainly to larger purchases of shellfish and ocean perch fillets. In November 1963, leading items were purchased in the following quantities (average price in cents per pound in parentheses): shrimp 894,321 pounds (69); scallops 220,975 pounds (57); oysters 148,705 pounds (89); ocean perch fillets 361,510 pounds (311); haddock fillets 163,560 pounds (39); flounder fillets 136,050 pounds (27); halibut 139,047 pounds (37); cod fillets 45,731 pounds (30); sole fillets 30,890 pounds (28); and clams 35,600 pounds (29).

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, November 1963 with Comparisons

QUANTITY				VALUE			
November		Jan.-Nov.		November		Jan.-Nov.	
1963	1962	1963	1962	1963	1962	1963	1962
(1,000 Lbs.)				($1,000)			
2,232	1,893	21,722	21,976	1,206	991	12,123	13,551

CANNED: There were sizable purchases of each of the three principal canned fishery products in November 1963.

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, November 1963 with Comparisons

Product	QUANTITY				VALUE			
	November		Jan.-Nov.		November		Jan.-Nov.	
	1963	1962	1963	1962	1963	1962	1963	1962
	(1,000 Lbs.)				($1,000)			
Tuna	1,011	1,013	4,003	4,859	416	433	1,836	2,564
Salmon	732	11	2,210	3,292	433	8	1,328	1,796
Sardine	59	9	458	94	22	3	180	42

* * * * *

December 1963: FRESH AND FROZEN: Shrimp, scallops, and groundfish fillets continued to account for a large part of purchases of fresh and frozen fishery products for the Armed Forces in the final month of 1963. In December 1963, leading items were purchased in the following quantities (average price in cents per pound in parentheses): shrimp 518,997 pounds (74); scallops 227,775 pounds (57); oysters 83,520 pounds (99); ocean perch fillets 246,662 pounds (31); flounder fillets 206,244 pounds (29); haddock fillets 73,610 pounds (40); cod fillets 71,638 pounds (30); sole fillets 40,790 pounds (27); salmon 67,226 pounds (64); and halibut 75,680 pounds (38).

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, December 1963 with Comparisons

QUANTITY				VALUE			
December		Jan.-Dec.		December		Jan.-Dec.	
1963	1962	1963	1962	1963	1962	1963	1962
(1,000 Lbs.)				($1,000)			
1,678	1,380	23,400	23,356	894	837	13,017	14,388

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, December 1963 with Comparisons

Product	QUANTITY				VALUE			
	December		Jan.-Dec.		December		Jan.-Dec.	
	1963	1962	1963	1962	1963	1962	1963	1962
	(1,000 Lbs.)				($1,000)			
Tuna	364	748	4,367	5,607	154	379	1,990	2,943
Salmon	1	3	2,211	3,295	1	2	1,329	1,798
Sardine	31	28	489	122	13	12	193	54

CANNED: In December 1963, purchases of canned tuna and canned salmon continued to lag behind those in the previous year.

* * * * *

January-December 1963 Summary: FRESH AND FROZEN: Total purchases of fresh and frozen fishery products for the use of the Armed Forces in 1963 were almost the same as those in 1962 and 1961. The value of the fresh and frozen purchases in 1963 was down 9.5 percent from 1962, but up 4.3 percent from 1961. The average price per pound of fresh and frozen purchases in 1963 was 55.6 cents compared with 61.6 cents in 1962 and 53.2 cents in 1961.

In mid-1963, frozen shrimp prices began to decline from the high levels established in 1962. The average price of frozen western halibut also declined in 1963. On the other hand, prices for frozen scallops, ocean perch fillets, and haddock fillets were generally higher in 1963 than in previous year.

CANNED: Total purchases of the 3 principal canned fishery products (tuna, salmon, and sardines) in 1963 were down 21.7 percent in quantity and 26.7 percent in value from those in 1962. The value fell more than the quantity because of generally declining prices for the principal canned fishery products in 1963. The total 1963 canned purchases were also down 18.0 percent in quantity and 17.7 percent in value from those in 1961.

With the recovery of the Maine sardine industry in 1962, purchases of canned sardines showed a sharp increase in 1963, but this could not offset declining purchases of the volume items (canned tuna and canned salmon). Purchases of canned tuna in 1963 were down 22.1 percent from 1962 and 38.3 percent from 1961. Purchases of canned salmon in 1963 showed a drop of 32.9 percent from 1962, but a gain of 57.6 percent over 1961.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

(2) See Commercial Fisheries Review, March 1964 p. 16, May 1963 p. 26.

* * * * *

VETERANS ADMINISTRATION ESTIMATED REQUIREMENTS FOR CANNED FISH FROM 1964 PACKS:

Early this year, the Veterans Administration announced its estimated requirements for various canned fish products from 1964 packs as follows:

Veterans Administration Requirements for Canned Fish from 1964 Packs

Canned Product	Can Size	Quantity (Doz. Cans)
Salmon, med. red or coho, skin and backbone on	4 lb.	3,000
Salmon, red or sockeye	No. 1	10,692
Salmon, red or sockeye	4 lb.	1,800
Salmon, red or sockeye, dietetic	No. 1/2	9,300
Sardines	No. 1	4,500
Tuna, light meat, chunk, in vegetable oil	4 lb.	7,500
Tuna, dietetic	No. 1/2	11,000

Filleting Machine

YELLOW PERCH FILLETING MACHINE NOW IN OPERATION IN GREAT LAKES REGION:

The United States manufacturers of a yellow perch filleting machine have announced that they now have a prototype machine in operation at Sheboygan, Wis. The filleting machine processed about 50,000 pounds of round yellow perch during the first month's operation.

After being headed and scaled, the fish are fed into the machine at a rate of about 1,000 pounds an hour. The machine produces approximately 500 pounds of fillets from that amount of headed and scaled fish. Less than 5 percent of the fillets produced require additional hand trimming. The fillet yield is about $2\frac{1}{2}$ percent less than that of a hand-filleting operation. The cost of the machine is reported to be $8,500 net, f.o.b. factory (Gladstone, Mich.).

Fish Meal

PLANT BEING BUILT IN GREAT LAKES REGION:

A fish-meal processing plant is being built at Milwaukee, Wis., at a reported cost of $250,000. It is the first major development of this type in the Great Lakes area and when completed this spring will process low-value fish (principally alewives) caught in the Great Lakes into fish meal for use in poultry and livestock feeds. The Milwaukee firm building the plant is a distributor of fresh fish and processes its less marketable catch for use

by pet food producers and mink ranchers. The firm has 2 of the 7 trawlers now operating out of western Lake Michigan ports. (Great Lakes News Letter, November-December 1963.)

Great Lakes

LAKE TROUT HATCHERY AND PLANTING PROGRAM:

More than 2.3 million young lake trout were planted in Lake Superior during 1963, according to the Great Lakes Fishery Commission. Yearling trout planted by participating Federal, state, and Canadian provincial agencies totaled about 1,974,000 and finerlings accounted for an additional 350,000. The previous high for this restocking program was set in 1962 when 1,853,000 yearling and fingerling lake trout were planted in Lake Superior.

A survey in mid-1963 of young lake trout being reared in state, Federal, and Canadian provincial hatcheries indicated that about 2.7 million yearlings will be available for planting in Lake Superior during the spring of 1964. The new Jordan River Federal fish hatchery, under construction in the northern section of Michigan's lower peninsula, is expected to increase sharply the hatchery stock of lake trout. Construction of that hatchery was sufficiently advanced in the fall of 1963 so that it could be used at that time to provide yearlings for planting in early 1965. With the Jordan River hatchery in operation, about 5 to 5.5 million yearling lake trout will be available annually for the Great Lakes rehabilitation program. (Great Lakes News Letter, September-October 1963.)

* * * * *

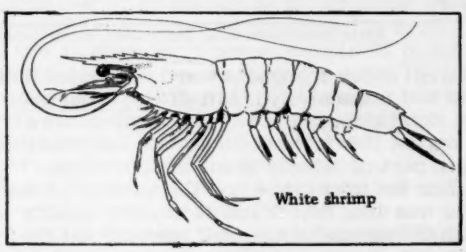
CONTRACT FOR WATER RESEARCH IN LAKE MICHIGAN AWARDED BY U. S. PUBLIC HEALTH SERVICE:

A $1 million contract for research on Lake Michigan has been awarded to the University of Michigan by the U. S. Public Health Service. A principal aim of the four-year study is to determine the effects of man's uses of the Lake and how fast his use is changing water quality. Another major purpose is to investigate the Lake's effect on weather. The research will be carried out by the University's Great Lakes Research Division and will be principally in the section of the Lake south of Milwaukee and Muskegon. The Division's three research ships will be involved in extensive sampling of the Lake for chemical and biological analysis of the water and bottom sediments. The project is designed to provide information needed for planning future management of the Lake and preservation of its water quality. (Great Lakes News Letter, September-October 1963.)

Gulf Exploratory Fishery Program

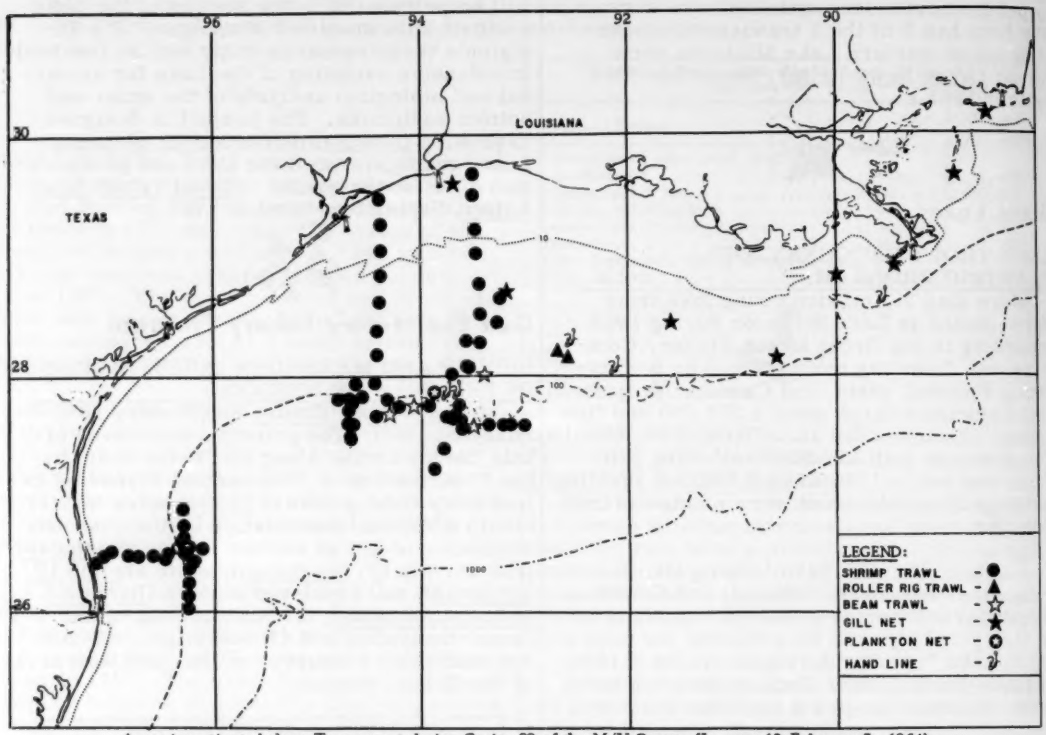
SHRIMP AND MENHADEN INVESTIGATIONS IN THE GULF OF MEXICO:

M/V "Oregon" Cruise 89 (January 13-February 5, 1964): The principal objectives of this 24-day cruise along the Texas coast by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon were to: (1) obtain additional information on the seasonal abundance of brown shrimp (Penaeus aztecus), pink shrimp (P. duorarum), white shrimp (P. setiferus), and royal-red shrimp (Hymenopenaeus robustus); (2) conduct deep-water faunal transects; and (3) investigate off-season menhaden resources in the northwest area of the Gulf of Mexico.



Catches of inshore shrimp on this cruise were light with 30 drags in depths of 4 to 50 fathoms yielding 86 pounds of brown shrimp, $7\frac{1}{2}$ pounds of pinks, and $35\frac{1}{2}$ pounds of whites. Brown shrimp were predominant from depths of 17 to 32 fathoms, pinks at 12 fathoms, and whites at 9 fathoms.

Royal-red shrimp were also caught in light quantities at depths from 200 to 300 fathoms where the bottom temperature ranged between 46.1° and 51.3° F. A total of 30 drags yielded 87 pounds of that species with the largest catch consisting of 12 pounds taken in 240 fathoms off Brownsville, Texas.



Areas investigated along Texas coast during Cruise 89 of the M/V Oregon (January 13-February 5, 1964).

Deep-water transects were conducted from 50 to 500 fathoms with rattail (Macrouridae) fish dominating the catches. Bottom trawling on the 400-fathom curve was not possible due in part or wholly to strong currents. Neither the abundance nor the variety of the fauna was like that found at similar depths in other regions of the Gulf, notably off the Tortugas.

Investigations on the off-season menhaden abundance were continued with 16 gill-net stations being occupied. Those stations were equally divided between bottom and surface sets in 5- to 50-fathom depths. Gill nets used were of No. 7 monofilament nylon, constructed of five 300-foot sections of $2\frac{1}{2}$-, $2\frac{5}{8}$, $2\frac{3}{4}$-, $2\frac{7}{8}$-, and 3-inch stretch mesh. About 89 adult large-scale menhaden (Brevoortia patronus) were caught in surface nets. Fifty-two of those fish were caught in 20 fathoms in spawning condition.

The newly acquired West Coast-type gill-net hauler greatly facilitated the handling of exceedingly long monofilament nets.

In addition to gill-net catches, 125 juvenile menhaden were taken in a 65-foot shrimp trawl that was fished in 5 fathoms of water.

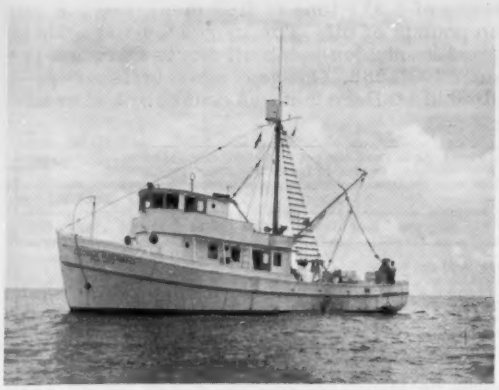
Note: See Commercial Fisheries Review, February 1964 p. 24.

* * * * *

SHRIMP GEAR STUDIES CONTINUED:

M/V "George M. Bowers" Cruise 49 (January 22-February 12, 1964): To evaluate the effectiveness of the electrical shrimp trawl in daylight fishing on the Key West-Tortugas shrimp grounds was the purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers. Results were similar to those obtained on the Apalachicola offshore grounds during the vessel's previous cruise (Cruise 48, November 6-27, 1963). As estimated from night trawling with standard gear, catches during daylight hours ranged from 20 to 60 percent of what was available.

In an attempt to increase the daytime catch, a number of factors were investigated. These included pulse width, pulse power, pulse repe-



The U. S. Bureau of Commercial Fisheries exploratory fishing vessel, George M. Bowers.

tition rate, and electrode length (pulses per shrimp). With the exception of pulse width, an increase in the value of those parameters did not markedly affect the catch. An improvement resulted when the pulse width was increased from about 10 microseconds to 100 microseconds. Further lengthening of the pulse, however, did not affect the catch rate.

The daylight electric trawl catch was typical since it was composed of large shrimp only (20-30 count), whereas night catches contained large shrimp as well as smaller sizes not caught during the day.

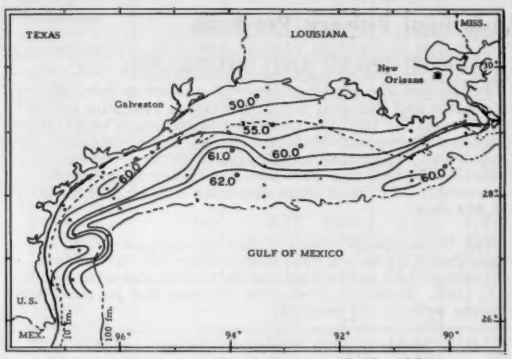
Indications were that burrowed shrimp were responding to the electrical field but all were not clearing the bottom. To examine that possibility, laboratory experiments using the cohesive Tortugas mud were to be conducted.

Note: See Commercial Fisheries Review, February 1964 p. 22.

Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-13 (January 18-30, 1964): Shrimp investigations in the Gulf of Mexico were expanded to include the collection of additional oceanographic data during this cruise of the chartered research Gus III. The vessel is operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Galveston, Tex. As part of the enlarged study, a total of 53 bathythermograph casts, 20 Nansen bottle casts, 26 plankton tows, 16 paired plankton tows, and 21 plankton sled tows were made. Successful plankton sled tows were made at 200 fathoms.



M/V Gus III Cruise GUS-13 (January 18-30, 1964).

During shrimp sampling at established stations, catches were generally light with only a few isolated hauls yielding fair results. Eight statistical areas (13, 14, 16, 17, 18, 19, 20, and 21) off Louisiana and Texas were covered. Thirty-two 3-hour tows with a 45-foot flat trawl were made.

Area 14 produced the largest catch which consisted of 41 pounds of 51-67 count white shrimp from under 10 fathoms. In area 18, a tow in over 20 fathoms yielded 37 pounds of 12-15 count brown shrimp. In area 16, a catch of 12 pounds of 26-30 count brown shrimp was taken from the 10-20 fathom depth. Area 17 yielded 9 pounds of 26-30 count brown shrimp from 10-20 fathoms, and area 13 produced 7 pounds of 31-40 count brown shrimp from the same depth. Pink shrimp were found in traces in a few tows, but the quantity in each case was less than one pound.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, Feb. 1964 p. 27.

Hawaii

SKIPJACK TUNA LANDINGS, JANUARY 1964:

Skipjack tuna landings in Hawaii in January 1964 were about 475,000 pounds. This was 176,000 pounds above the 1948-1963 average for the month. During January there were 80 productive trips giving an average of 4,473 pounds per trip. Individual catches ranged from

147 pounds to 13,685 pounds. Oahu-based vessels landed 94 percent of the total catch.

Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, 1962-63: Based on domestic production and imports, the United States available supply of fish meal for 1963 amounted to 624,003 short tons--60,464 tons (or 10.7 percent) more than during 1962. Domestic production was 69,586 tons (or 22.4 percent) less, but imports were 130,050 tons (or 51.5 percent) higher than in 1962. Peru continued to lead other countries with shipments of 291,544 tons.

The United States supply of fish solubles (including homogenized fish) during 1963 amounted to 102,997 tons--a decrease of 21.2 percent as compared with the same period in 1962. Domestic production dropped 22.6 percent, but imports were up 7.4 percent.

U. S. Supply of Fish Meal and Solubles, 1962-63

Item	1/1963	1962
	(Short Tons)	
Fish Meal and Scrap:		
Domestic production:		
Menhaden	179,971	238,680
Tuna and mackerel	21,626	26,559
Herring	7,425	5,095
Other	32,624	40,898
Total production	241,646	311,232
Imports:		
Canada	50,925	42,806
Peru	291,544	186,249
Chile	23,533	9,247
So. Africa Republic	12,296	10,084
Other countries	4,059	3,921
Total imports	382,357	252,307
Available fish meal supply	624,003	563,539
Fish Solubles:		
Domestic production 2/	96,224	124,334
Imports:		
Canada	2,034	1,335
Iceland	55	2,332
So. Africa Republic	411	1,717
Other countries	4,273	924
Total imports	6,773	6,308
Available fish solubles supply	102,997	130,642

1/Preliminary.
2/50-percent solids. Includes production of homogenized condensed fish.

* * * * *

U. S. FISH MEAL, OIL, AND SOLUBLES:

Production, December 1963: During December 1963, a total of 7,954 tons of fish meal and scrap and over 6 million pounds of oil was produced in the United States. Compared with December 1962, this was an increase of 5,271 tons of fish meal, and 5.4 million pounds of oil. The increases were due to a good menhaden catch off North Carolina in December 1963. One year ago this fishery resulted in a failure that was caused by bad weather.

U. S. Production of Fish Meal, Oil, and Solubles, December 1963 1/ with Comparisons

Product	December		Jan.-Dec.	
	1/1963	1962	1/1963	1962
	(Short Tons)			
Fish Meal and Scrap:				
Herring	2/	25	7,425	5,095
Menhaden 3/	6,067	308	179,971	238,680
Sardine, Pacific	1	-	27	702
Tuna and mackerel	1,356	1,649	21,626	26,559
Unclassified	530	701	20,597	27,377
Total	7,954	2,683	229,646	298,413
Shellfish, marine-animal meal and scrap	4/	4/	12,000	12,819
Grand total meal and scrap	4/	4/	241,646	311,232
Fish Solubles:				
Menhaden	2,224	125	73,970	84,885
Other	526	1,581	15,030	28,353
Total	2,750	1,706	89,000	113,238
Homogenized condensed fish	-	132	7,224	11,096
	(1,000 Pounds)			
Oil, body:				
Herring	2/	170	5,726	5,255
Menhaden 3/	5,342	69	165,037	237,815
Sardine, Pacific	-	-	4	166
Tuna and mackerel	379	343	5,654	5,175
Other (including whale)	362	97	7,588	7,397
Total oil	6,083	679	184,009	255,808

1/Preliminary data.
2/Included with unclassified.
3/Includes a small quantity of thread herring.
4/Not available on a monthly basis.
Note: Beginning with February 1963, fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

The quantity of fish solubles manufactured in December 1963 amounted to 2,750 tons or 61 percent more than in December 1962. Menhaden solubles accounted for 81 percent of the total solubles manufactured.

The 1963 production of fish meal amounted to 241,646 tons. This was a decrease of 69,586 tons or 22 percent compared with 1962. Menhaden meal decreased 58,709 tons or 25 percent. The oil yield for 1963 amounted to 184 million pounds, a decrease of 72 million pounds or 28 percent as compared with 1962. Production of fish solubles and homogenized condensed fish decreased 28,110 tons or 23 percent in 1963.

* * * * *

Production by Areas, January 1964: Preliminary data on U. S. production of fish meal, oil, and solubles for January 1964 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U. S. Production[1] of Fish Meal, Oil, and Solubles, January 1964 (Preliminary) with Comparisons

Area	Meal	Oil	Solubles	Homogenized[3]
	Short Tons	1,000 Pounds	(Short Tons)	
January 1964:				
East & Gulf Coasts	799	160	74	-
West Coast[2]	1,688	236	1,166	-
Total	2,487	396	1,240	-
Jan. 1963 Total	2,285	424	1,391	50

1/Does not include crab meal, shrimp meal, and liver oils.
2/Includes American Samoa and Puerto Rico.
3/Includes condensed fish.
Note: Beginning with March 1963 fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

* * * * *

Major Indicators for U. S. Supply, January 1964 and December 1963: United States production of fish meal in January 1964 was higher by 8.8 percent as compared with January 1963. Production of fish solubles and fish oil was down by 13.9 and 6.6 percent, respectively.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, January 1964

Item and Period	1/1964	1/1963	1962	1961	1960
		(Short Tons)			
Fish Meal:					
Production:					
January	2/2,487	2/2,285	2,941	2,723	3,828
February	2/	2/2,847	3,616	2,071	3,116
Jan.-Dec.	2/	2/229,646	298,413	291,337	270,343
Year 3/	2/	2/241,646	311,232	311,265	290,137
Imports:					
January	-	18,495	25,427	9,531	8,571
February	-	40,086	18,819	14,344	8,081
Year	-	383,107	252,307	217,845	131,561
Fish Solubles 4/:					
Production:					
January	1,240	1,441	1,808	1,620	1,697
February	-	1,223	1,726	1,650	1,812
Year	-	96,224	124,334	112,241	98,929
Imports:					
January	-	148	273	219	214
February	-	169	2,249	155	1,875
Year	-	6,773	6,308	6,739	3,174
Fish Oils:		(1,000 Lbs.)			
Production:					
January	396	424	763	489	534
February	-	324	408	366	554
Year	-	184,009	255,808	266,668	215,653
Exports:					
January	-	79	509	13,449	2,068
February	-	2,458	21,647	17,456	23,828
Year	-	262,342	123,050	122,486	143,659

1/Preliminary.
2/Preliminary data for 1963 and 1964 based on reports which accounted for the following percentage of production in 1962: Fish meal, 93 percent; solubles and homogenized fish, 97 percent; and fish oils, 95 percent.
3/Small amounts (10,000 to 25,000 tons) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/Includes homogenized fish.

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oils, December 1963

Item and Period	1/1963	1962	1961	1960	1959
		(Short Tons)			
Fish Meal:					
Production:					
January	2,285	2,941	2,723	3,828	3,095
December	2/8,391	2,683	12,763	9,178	15,378
Jan.-Nov.	2/221,056	295,730	278,574	261,165	266,866
Year 3/	-	311,232	311,265	290,137	306,551
Imports:					
January	18,495	25,427	9,531	8,571	19,700
December	-	18,977	23,268	15,564	5,508
Jan.-Nov.	352,628	233,330	194,577	115,997	127,417
Year	-	252,307	217,845	131,561	132,925
Fish Solubles 4/:					
Production:					
January	1,441	1,808	1,620	1,697	1,913
December	2/3,257	1,838	4,936	2,897	5,429
Jan.-Nov.	2/94,398	122,496	107,305	96,032	159,930
Year	-	124,334	112,241	98,929	165,359
Imports:					
January	148	273	219	214	1,567
December	-	387	472	60	420
Jan.-Nov.	3,613	5,921	6,267	3,114	26,210
Year	-	6,308	6,739	3,174	26,630
Fish Oils:		(1,000 Lbs.)			
Production:					
January	424	763	489	534	497
December	2/5,732	679	11,562	7,981	14,094
Jan.-Nov.	2/177,972	255,129	255,106	207,672	179,230
Year	-	255,808	266,668	215,653	193,324
Exports:					
January	79	509	13,449	2,068	6,735
December	-	172	10,484	15,807	19,586
Jan.-Nov.	229,080	122,878	112,002	127,852	124,895
Year	-	123,050	122,486	143,659	144,481

1/Preliminary
2/Preliminary data for 1963 based on reports which accounted for the following percentage of production in 1962: Fish meal, 93 percent; solubles and homogenized fish, 97 percent; and fish oil, 95 percent.
3/Small amounts (10,000 to 25,000 tons) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/Includes homogenized fish.

Marketing

EDIBLE FISHERY PRODUCTS PROSPECTS IN 1964:

The outlook for supplies of edible fishery products in 1964 is expected to be little changed from previous years. The total United States catch may again decline, but more fishery products are expected to be imported. Major items for which import increases are expected include ocean perch and cod fillets, shrimp, tuna, scallops, and spiny lobster tails.

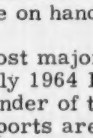
Frozen stocks of fish and shellfish on hand as 1964 began were larger than a year earlier. Canned fish stocks were down, with the exception of pink salmon and shrimp, due to smaller 1963 packs. A substantial increase in the 1963 domestic shrimp landings combined with a continuing high level of imports have resulted in

an unusually large carryover in shrimp stocks (frozen and canned). Large inventories of frozen Great Lakes chubs, fish sticks and fish portions, flounder, halibut and ocean perch fillets and steaks, crab meat, scallops, shrimp (both frozen and canned), and canned pink salmon were on hand as 1964 began.

Supplies of most major species were adequate for the early 1964 Lenten season and during the remainder of the year. Increased United States imports are expected to offset a small decline in the total domestic fishery landings anticipated for 1964.

Retail prices of some major fishery products will most likely strengthen during the year. Fresh and frozen shrimp and canned tuna prices, in particular, may firm up. Little change is expected in the United States per capita consumption of all fishery products in 1964.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the Department of Agriculture's January 1964 issue of the National Food Situation (NFS-107).



National Fisheries Center

TRAINED DOLPHINS WILL BE FEATURED:

When the National Fisheries Center and Aquarium opens in Washington, D. C., some time about 1967, it will feature a collection of unusually active aquatic animals. To help accustom them to their new habitat and make them carry out their natural activities more frequently, the Fisheries Center has engaged Keller Breland, a nationally-known animal behaviorist and psychologist, announced the U. S. Department of the Interior on February 2, 1964.

More than 7,000 animals have been trained by Breland and his wife since 1950, most of them at their farm in Hot Springs, Ark. Both have doctors degrees in psychology and have trained more than 40 different species of animals. Breland's training of dolphins and other aquatic animals at the National Fisheries Center will have the basic purposes of making the Center more useful as a scientific and educational facility, and at the same time, obtain results that will be of high interest to spectators.

Planners for the Fisheries Center are trying to prepare the nearest thing to natural habitats for the marine mammals and fish. An aquatic animal is inhibited by captivity, and research scientists at the Center will wish to study its natural behavior. Breland's work at the National Fisheries Center will be a departure from his usual training of aquatic animals. At the Marine Studios in Florida and the Marineland of the Pacific in California he trained dolphins to seize a baton or jump through a hoop. At the Fisheries Center, the leap of the dolphin will be more natural, without the frills of a public show. The trainer will not be trying to create a circus. Instead, he will be trying to make the dolphin behave naturally in a near-natural habitat for the benefit of both scientists and public viewers.

What the trainer will get in the beginning is a newly-captured dolphin, a creature that fears its new surroundings and has never eaten a thawed-out frozen fish. He will flip the dead fish in the water to make it appear alive, and gradually the dolphin will come closer to his food. Eventually it will grab the fish and make a panicked retreat. If the dolphin happens to grab one of the trainers fingers, it will let loose. The dolphin has up to 100 spiked teeth, but it seldom leaves a tooth mark on a human. The dolphin's fear will begin to subside as it learns to take the fish more slowly. Then it will learn to wait for a pat on the head before it can take the fish. A pat on the head and a scratch on the stomach will follow and within a month, the dolphin will allow itself to be picked up by the trainer before it gets the fish.

The trainer's technique is based on a reward for the desired response. When an animal does something wrong, the incorrect action is ignored. Punishment and fear are never used in training. After the dolphin learns to eat dead fish, a feeder will be installed in its raceway. The dolphin will be taught that every time he hears a certain signal, he can go to the feeder and find that a fish has been released. Next a photocell will be installed on the sides of the raceway, just above the surface of the water. The dolphin's natural curiosity soon will cause him to stick his head out of the water at the right place. When he does, the photocell beam will be broken and the signal will sound. The dolphin will dive to the feeder box. Now the photocell beam will be gradually raised to higher elevations. The dolphin has to leap higher and higher to break the beam and may leap as high as 15 feet to get his reward. A further refinement

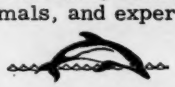
is a background signal--a light or supersonic tone--to let the dolphin know when the feeder circuit is in operation. He will learn that without this signal, there is no point in jumping. In that way, his leaps will be confined to periods when they are desired.

Dolphins at the National Fisheries Center will be taught to broadjump, an accomplishment never fefore seen in public. The dolphins will learn to leap, then travel up to 25 feet in a horizontal line to break two photocell beams. Another first achievement in public demonstration will be the dolphin's ability to use sonar to find food and avoid obstacles in murky water. Study of this capability will have important scientific benefits. The dolphin will be blindfolded by placing small rubber cups over his eyes. He will send out high-frequency signals and use the bounced-back signals to find a designated target. As he scans for the hidden object, the audience will be able to watch his underwater search. Spectators also will see the dolphin's high frequency signals registered on an oscilloscope. And sound transducers will lower the frequencies to an audible range so the signals can be heard as pings. The dolphin will "home-in" on the target, touch it with his nose and dart to the feeder box for his reward.

The dolphin's natural sonar is much more efficient than the similar manmade device, according to Breland, who said that researchers would like to duplicate the original sonar of the dolphin. They also are interested in the ease with which he moves through water, causing only a minimum of turbulence and drag. More than streamline design and smooth skin are involved. As the dolphin moves through the water, his skin ripples, matching the turbulence and reducing it. Finally, there will be attempts to train the dolphin in the use of his audible "voice." These sounds come from his blowhole, and while the source is not known, Breland said they are not the sounds of breathing. It is already possible to teach the dolphin to make whining and "raspberry" sounds for controlled periods of time, but the trainer now wants to increase the range of sounds and shape them into patterns that resemble such human words as "thank you." "This won't mean that the dolphin will be speaking the human language," Breland said, "but it will show the vast degree to which he can learn different patterns of behavior."

The National Fisheries Center will be operated by Interior Department's Bureau of Sport Fisheries and Wildlife. The Bureau will provide research laboratories at the Center for its own scientists, for those of other Federal Government agencies, and for scientists of other countries. Planning for the Center has reached the point where design criteria soon will be turned over to the architects. Congress has authorized the $10 million research and educational facility with the proviso that construction and operating costs be repaid to the Federal Treasury. This will be accomplished by charging admission, except to student groups. As a result, the Center will impose no costs on taxpayers.

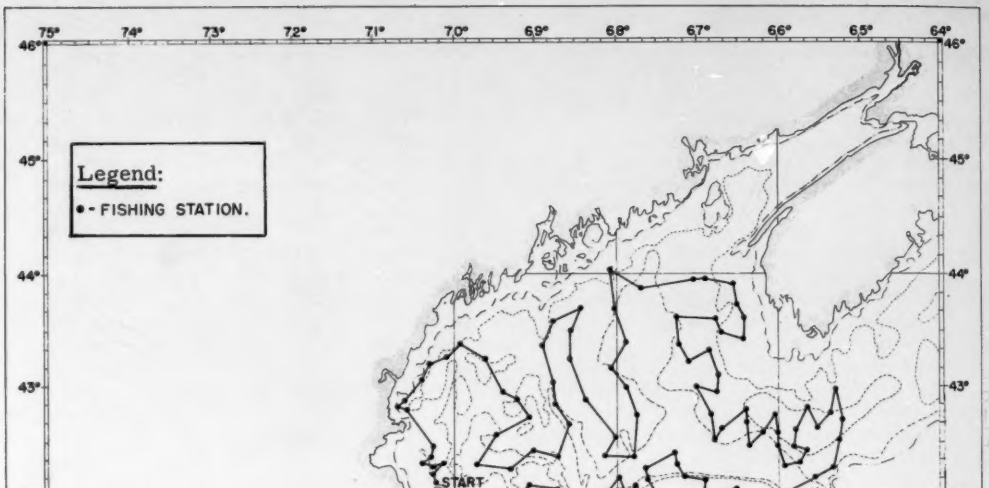
Aquatic animals from all parts of the world will be placed under the closest scrutiny ever achieved in a single location. The studies will include research into genetics, reproduction, nutrition, fish diseases, antibiotics produced by marine animals, and experimental ecology.



North Atlantic Fisheries Investigations

WINTER DISTRIBUTION AND ABUNDANCE OF GROUNDFISH SPECIES STUDIED: M/V "Albatross IV" Cruise 64-1 (January 16-February 15, 1964): To determine the winter distribution and relative abundance of groundfish species from Nova Scotia southward to New Jersey and to study the food of a number of groundfish species were the purposes of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Albatross IV. The area of investigations southward from Nova Scotia extended to the Continental Shelf and to New Jersey, including Browns Bank, Georges Bank, and the inshore waters along the coast.

A total of 194 groundfish survey stations were completed on this cruise and all fish captured were identified and measured. The stomach contents of 3,159 fish of 40 species were examined and recorded in the study area. Scale samples were taken from 1,280 haddock and 473 yellowtail flounder. Otoliths were extracted from 195 silver hake and 136 cod at selected stations. A sample of sea herring was collected and frozen for the Bureau of Commercial Fisheries Biological Laboratory at Boothbay Harbor, Me. Invertebrates taken by the trawl at each station were preserved for further identification.



Shows the station pattern for Cruise 64-1 of the research vessel Albatross IV, January 16-February 15, 1964.

In the northern part (Gulf of Maine), whiting (silver hake) were caught mainly in the deep water from 50 to 140 fathoms, while in the southern part (south of Georges Bank) whiting were taken in slightly shoaler water from 50-100 fathoms. Spiny dogfish were also caught in the deep water in the north but were abundant in the shoal water in the south. Scup were noticeably absent from all catches throughout the sampling area. Squid were generally absent in the northern part but abundant on the southern New England grounds. Haddock were abundant north of Cape Cod especially on Georges Bank and on Browns Bank with a few specimens taken south of Cape Cod. Pollock were taken north of Cape Cod with a few specimens caught on the southern New England grounds.

The distributions of many of the species related to depth and temperature were to be determined at a later date.

North Pacific Exploratory Fishery Program

SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER CONTINUED:

M/V "John N. Cobb" Cruise 63 (January 8-22, 1964): To monitor deep-water marine fauna at stations off the mouth of the Columbia River was the primary objective of this 15-day cruise by the U. S. Bureau of Commercial Fisheries exploratory vessel John N. Cobb. It was the 13th survey cruise on the cooperative study of demersal fauna off the Columbia River conducted by the U. S. Bureau of Commercial Fisheries and the Atomic Energy Commission. The John N. Cobb has made 4 cruises on this study and 9 cruises were made by the chartered vessel Commando.

Stormy weather greatly hampered fishing operations during this cruise and only 5 of the 17 stations established along the trackline were monitored. All of those stations were at depths of 200 fathoms or less. An eastern otter trawl with a $1\frac{1}{2}$-inch liner in the cod end was used to sample the fauna.

English sole (Parophrys vetulus), rex sole (Glyptocephalus zachirus), and skates (Raja sp.) dominated the catch at the 50-fathom station. Green-striped rockfish (Sebastodes elongatus) was the most abundant species at the 75-fathom station. A total of 400 pounds of sablefish (Anoplopoma frimbria) and turbot (Atheresthes stomias) were caught in a one-hour tow at 200 fathoms. The largest catch of ocean perch (Sebastodes alutus) for a total of 350 pounds was also taken at 200 fathoms. Like past winter cruises Dover sole (Microstomus pacificus) and hake (Merluccius productus) were virtually absent from the catches in all the tows.

Pacific ocean perch (Sebastodes alutus)

Bottom temperatures and salinity samples were taken at all stations sampled with the trawl. Samples of the fauna collected for the Atomic Energy Commission were delivered to the Laboratory of Radiation Biology, University of Washington, Seattle, Wash.

A biologist from the Fish Commission of Oregon was aboard the vessel during the cruise to tag Dover sole and sablefish for migratory information.

Note: See Commercial Fisheries Review, January 1964 p. 23.

Oceanography

DEEP-DIVING SUBMARINE FOR WOODS HOLE OCEANOGRAPHIC INSTITUTION:

The Alvin, a 22-foot research submarine designed to dive 6,000 feet into the ocean, is scheduled for delivery in the spring of 1964 to the Woods Hole (Mass.) Oceanographic Institution. Design specifications of the vessel are: weight, 11 tons; maximum speed, 6 knots; and endurance at a speed of 2.5 knots, 10 hours. The 2-man craft was financed by a $575,000 grant from the U. S. Office of Naval Research as part of its Deep Research Vehicle Program.

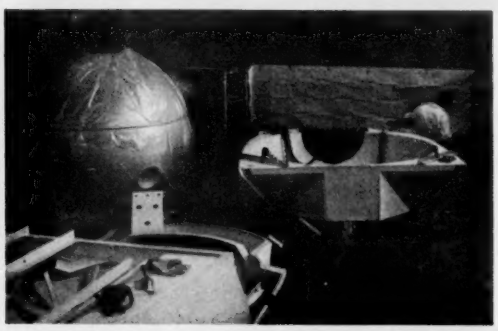


Fig. 1 - Lower section and sphere of the Alvin.

Purpose: The Alvin has been designed as a sophisticated tool for marine investigations. It will not be possible to state what work the Alvin will accomplish until thorough tests are completed; however, scientists believe the vessel will have multiple uses.

In the study of biology, a deep-diving vehicle would make it possible for scientists to observe marine life in its natural habitat. Observations of the concentrations and behavior of marine populations at great depth, not now possible except with cameras, could be made directly by scientists or recorded with manually-operated cameras. This would include observations of bottom populations, as well as the "scattering layer" of marine life which rises toward the surface at night and descends at daylight.

In the study of geology, a craft of this type would enable scientists to observe the topography and composition of the bottom (within the craft's range) more comprehensively than is now possible with camera and television equipment. Interesting samples could be collected as they are sighted, whereas now relatively hit-or-miss systems of dredging are used.

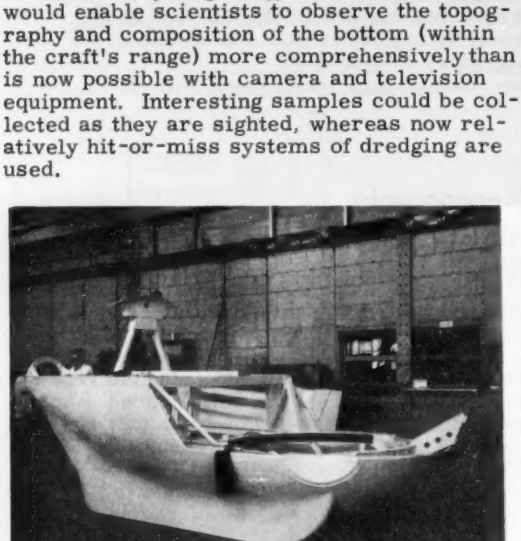


Fig. 2 - The Alvin's lower section with a fibreglass hull.

In the study of physical oceanography, a deep-diving vehicle might be able to measure speed and direction of currents by trimming to neutral buoyancy and logging its own course. By drifting slowly downward through a water column the Alvin could obtain excellent continuous profiles of temperature, salinity, and other water characteristics.

The scientific uses of such a craft would not be limited to those described above, which are mentioned only as examples of the types of work which might be accomplished.

The maximum operating depth called for in the design of the Alvin is 6,000 feet. This depth capability would open to exploration about one-sixth of the ocean bottom and about one-half of the water volume of the oceans and neighboring seas, including the continental shelves, part of the continental and island slopes, and many sea mounts. The upper 6,000-foot marine layer includes much of the life of the oceans as well as the region where variables such as currents, temperatures, and sound velocities of interest to the oceanographer are most active.

Scientific Instrumentation: Five viewing ports are planned--1 looking directly forward, 1 downward, 1 to each side, and 1 peephole directly upward through the hatch for use when surfacing. There is a planned provision for 1,200 pounds of scientific "payload" consisting of but not necessarily limited to the following: scanning sonar, echo-sounder, underwater telephone, lights, underwater television, mechanical arm, and a variety of cameras. Navigation equipment will include a gyrocompass, magnetic compass, speed indicator, and depth gauges.

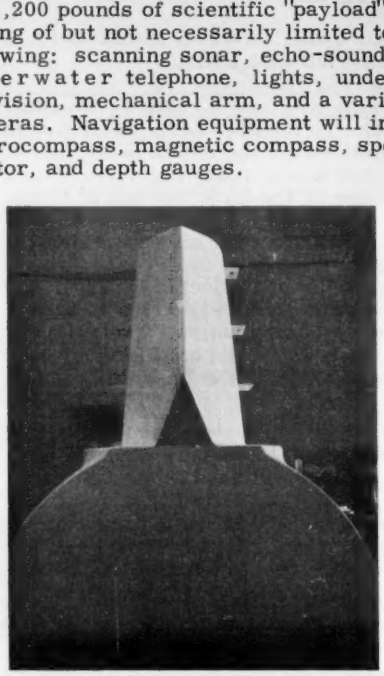


Fig. 3 - Aft view of conning tower section of Alvin.

Pressure Hull: The Alvin's pressure hull, which will house the crew and much of the scientific equipment, has been fabricated from high-grade steel with an inside diameter of 79.3 inches and a shell thickness of $1\frac{1}{3}$ inches. This all-important unit is constructed from twin hemispheres welded together. Its position is forward in the vehicle and by itself is positively buoyant. The remainder of the vehicle, enclosed in an outside skin of fiberglass, is open to the pressure of the sea. The fiberglass enclosure houses additional buoyancy sphere and plastic buoyancy material, plus the power supply and propulsion equipment. Whereas the pressure hull is strong enough to maintain atmospheric pressure by withstanding outside pressures, the fiberglass housing will avoid collapse by allowing inside pressure to equalize with outside pressure.

Propulsion: The Alvin will be propelled by battery-powered electric motors running in

oil and driving hydraulic pumps. It will have three propellers for locomotion and maneuvering. The main propulsion propeller in the stern is horizontally trainable plus or minus 50 degrees (by hydraulic ram) and will serve also as a rudder. Two smaller propellers are mounted forward near the pressure hull and can be turned 360 degrees in the vertical plane to provide fore and aft or up and down thrust. Generally, ascent and descent will be controlled by flooding and exhausting ballast tanks, similar to a conventional submarine, and by use of propeller thrust. In case of emergency, the buoyant pressure hull can be released from the rest of the vehicle, and, short of that, other heavy components, including the battery supply and the mechanical arm, can be manually-released to provide needed lift.

Life Support System: There will be approximately 170 cubic feet of space in the pressure sphere for breathing atmosphere. A system will be provided for supplementing the oxygen supply and removing the carbon dioxide and water vapor during the period of a maximum dive--24 hours.

Operations: The Alvin will be dependent upon a mothership or near-shore base for battery and air charging, life support chemicals, and other necessities. It is not planned to do much horizontal traveling on the surface; rather the Alvin would be carried to the scene of a dive by the mothership and lowered into the water. This mode of operation is one reason for Alvin's relatively small size.

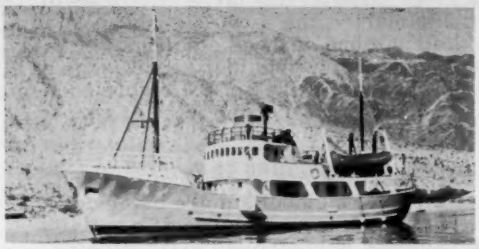
Testing Schedule: Plans call for completion of the Alvin and delivery to Woods Hole in the spring of 1964. Some preliminary testing of the vehicle will be conducted before that time, including tests of the pressure hulls at the Southwest Research Institute, San Antonio, Texas. The scheduling of underwater tests will depend upon weather conditions prevailing when the Alvin is completed. (Woods Hole Oceanographic Institution, January 1964.)

Note: See Commercial Fisheries Review, May 1963 p. 36.

* * * * *

NEW OCEANOGRAPHIC VESSEL FOR BIOLOGICAL RESEARCH FOUNDATION:

A new 97-foot oceanographic research vessel, the Neptunus Rex of the Beaudette Foundation for Biological Research at Santa Ynez, Calif., was designed and built in Norway expressly for oceanographic research. She is of a North Sea trawler design with a welded steel hull, and was launched in August 1962.



The new oceanographic research vessel, Neptunus Rex.

Specifications and other dimensions of the Neptunus Rex are: Beam: 21 feet, 6 inches; draft: 11 feet; displacement: 400 tons; tonnage: 170 gross, 112 net; propulsion: two 300-hp. Diesels; propeller: single 3-blade variable pitch; complement: crew of 7 and scientific staff of 6.

The main scientific working area of the vessel is at the forward well deck where the main winch and A-frame are located. The main winch is operated hydraulically and has interchangeable cable drums capable of using other drums with different types of cable.

Forward of the open working area, a 400-square-foot laboratory occupies the whaleback of the vessel and has both 110 and 220 volt a.c. available. Meteorological equipment includes barometer, barograph, anemometer, and psychometer. A bathythermograph winch is mounted on the after boat deck. The bathythermograph has specially designed fins permitting it to dive to a depth of 400 meters (1,312 feet) while it traces a record of the temperature and depth of the water on a graphic slide.

The vessel started on her first expedition in April 1963 when she went to Bahia de Los Angeles, Gulf of California, and made a second visit in October 1963 to the east coast of Baja, Calif. (National Oceanographic Data Center Newsletter, December 31, 1963.)

* * * * *

PUERTO RICO NUCLEAR CENTER MARINE BIOLOGY PROGRAM:

The Puerto Rico Nuclear Center of the University of Puerto Rico is conducting a marine biology program designed to measure biological productivity and the movements of

selected trace elements in the hydrosphere and biosphere of a tropical marine environment which extends seaward from the mouth of a river transporting large quantities of silt. Primarily, the work is concerned with the distributions of trace elements and is based upon the concept that a knowledge of the geochemical routes of the stable elements may be used to predict the fates of corresponding radioelements.

The investigations of productivity and trace element metabolism are being done with carrier-free or high specific activity radioisotopes in controlled environments. The trace element analyses are being done by neutron activation analysis, atomic absorption, flame spectrophotometry, and X-ray emission spectrography. The oceanographic measurements are made with standard equipment.

The geographical area of investigation includes the Afidsco River watershed (covering 200 square miles) and the adjoining marine area of the west coast of Puerto Rico extending north from Mayaquez past Punta Higuero to the mouth of the Culebrinas River and west into the Mona Pass to Desocheo Island. The area includes the reactor site at Punta Higuero.

All phases of the work were in progress in January 1964. (Puerto Rico Nuclear Center, University of Puerto Rico, College Station, Mayaquez, Puerto Rico.)

* * * * *

MARINE BIOACOUSTIC RESEARCH MAY AID COMMERCIAL FISHERIES:

Fish and other marine organisms "talk" to each other, according to a scientist who predicts that knowledge of the sounds made by them will be used to track and locate schools of commercially-valuable fish. This is the conviction of the Director of the world's largest underwater bioacoustic library at the University of Rhode Island Graduate School of Oceanography after more than 17 years of continuous research.

Noting that the U. S. Navy had already developed listening devices for tracking enemy submarines, the acoustic biologist suggested that a series of fixed, unmanned, underwater listening posts be established. Underwater sounds could then be intercepted and rebroadcast to cruising fishermen. The scientist also believes that it may be possible to attract fish by broadcasting underwater man-made sounds. Sounds that frighten some marine creatures have already been developed. They might prove beneficial in herding fish or containing them in a chosen area.

Also noting that the noises produced by underwater creatures are usually associated with "colony life," the scientist said that if one fish of a school is captured, a characteristic sound is produced by certain species, and the entire group flees. Underwater biological noises are also associated with such activities as breeding and competitive feeding. In addition, it was explained that certain nocturnal fish have well-developed sound-producing systems.

After a thorough study of the sounds made by white whales held in captivity, the scientist and an associate at the University of Rhode Island, said in the Sears Foundation's Journal of Marine Research that their work "confirms previous evidence of a wide repertoire of recognizably different types of sound that, used singly or in combination, have specific meaning."

Working under the oldest continuous biological contract with the Office of Naval Research, the Director of the bioacoustic library accumulates hundreds of miles of audio tape each year. When a new sound is discovered and thoroughly analyzed, it becomes part of the "Reference File of Biological Sounds," maintained since 1954 at the request of the U. S. Navy. Although this contains sounds recorded from researchers all over the world, an estimated 98 percent of the material was developed by the library's director and associates.

To date, about 400 of the sound-producing organisms in the Western North Atlantic have been auditioned by the scientist, ranging from shrimp and crab to porpoise, whales, sea lions, sea cows, and other sorts of fish. Every marine animal, it was discovered, has a characteristic sound "signature." (Source: University of Rhode Island--reprinted from National Oceanographic Data Center Newsletter, December 31, 1963.)

Note: See Commercial Fisheries Review, July 1963 p. 27.

Pollution

ANTIPOLLUTION DAM WILL IMPROVE FISH RUNS IN SACRAMENTO RIVER:

Migratory steelhead and salmon in California's Sacramento River will have a better chance of suriving as a result of the apparently successful operation of the Spring Creek Debris Dam. Built by the Bureau of Reclamation, U. S. Department of the Interior, to protect valuable commercial and sport fish spawning grounds, the new dam traps silt and chemical laden water, then slowly releases it in amounts below levels potentially toxic to fish in the Sacramento River.

Spring Creek flows into the Sacramento above Keswick Dam, carrying water which drains the historic mining areas near Redding. The water spilling from the watershed brings minute particles and soluble forms of copper, arsenic, lead, zinc, and other chemicals. By storing large quantities of runoff, then releasing the potentially toxic water in small quantities, the new antipollution dam protects spawning areas below Keswick Dam. Before construction of the dam, large numbers of fish were periodically destroyed by the polluted water from Spring Creek.

An Assistant Secretary of the U. S. Department of the Interior noted that the Spring Creek Dam marked a major milestone in the development of answers to problems of water pollution management. The dam facilitates nearby power production, provides flood control, and--most critically--handles the carefully controlled discharge of potentially dangerous polluted water. The primary effect of the dam is to preserve and protect valuable salmon and steelhead resources. "It is an interesting footnote to the reported success of the dam," the Assistant Secretary said, "that this dam is, in reality, one of the prices we are paying in the 1960's for the development of northern California's rich mineral deposits a century ago. Its success, however, strengthens the determination of Federal and state water planners and officials to put the full weight of modern scientific technology into solving the complex problems of water throughout the Nation."

The Spring Creek Dam reservoir provides storage space for some 2,000 acre-feet of sediment--enough to last an estimated 50 years. The dam was completed in the summer of 1963 and with heavy rains in September, it received its first crucial test. A large storm in November filled the reservoir to more than half its holding capacity. Regulated releases began November 8 and continued through the first week in January. As the Spring Creek water was mixed with Sacramento River water and with water from the Trinity River, it was diluted to the point of being safe to fish in the lower river. In late 1963 and early 1964, there was an estimated runoff of 6,000 acre-feet of polluted water from the old mining areas, however, there were no reports of damage to salmon or steelhead in the Sacramento River.

Before construction of Shasta Dam, the heaviest runoff of polluted water coincided with flood flows from the Upper Sacramento, and the toxic compounds were diluted before they could do serious damage. But since 1944, Shasta Dam has controlled flooding on the Upper Sacramento and the polluted water from Spring Creek had been entering Keswick Reservoir at times when releases from Shasta were low.

Quality

GUIDELINES FOR TROLL SALMON VESSELS:

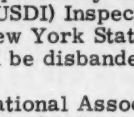
The continuing interest of fishermen in landed fish quality was demonstrated at a meeting held in early 1964 by the Seattle (Wash.) Technological Laboratory of the U.S. Bureau of Commercial Fisheries. The meeting was mainly concerned with a review of quality improvement guidelines for Pacific troll salmon ice vessels. Fishermen's representatives discussed the quality problems encountered during the 1963 troll salmon season, including handling of catch, icing, physical damage, and sanitation of vessels. It was agreed that those are still the most important factors to be stressed, and that the use of preservative ices or refrigerated sea water in the troll fishery have not been decisive factors in landed fish quality. The Seattle laboratory will cooperate further with fishermen in providing additional recommendations for use of sanitizing agents and suggestions for educational material on icing time and temperature in relation to fish quality and bacterial spoilage.

* * * * *

NEW YORK STATE ACCEPTS USDI INSPECTION FOR FISH:

All fresh and frozen fish fillets purchased for New York State Institutions after June 1, 1964, will be inspected by U. S. Department of the Interior (USDI) Inspection Service. At that time, the New York State fishery inspection service will be disbanded.

The use of National Association of State Purchase Officials (NASPO) specifications has also been considered by New York, but will be deferred until NASPO specifications exist for all fishery products used by the State.



Salmon

ATLANTIC RESTORATION STUDIES:

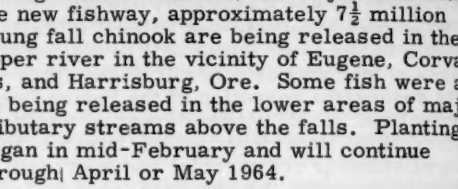
Experimental studies aimed at improving fish-cultural methods for Atlantic salmon will be carried out by the U. S. Bureau of Sport Fisheries and Wildlife. The experimental procedure will be designed by the Bureau's Maine Cooperative Fishery Unit, located at the University of Maine, in cooperation with all agencies concerned. Experiments will be conducted at the Craig Brook National Fish Hatchery. The objective of the program is to provide information that will enable fish culturists to produce hatchery-reared salmon with physiological characteristics approaching those of the wild fish, in predictable numbers, and at the proper time for stocking.

The salmon restoration programs of Maine's Sea-Run Commission require a dependable supply of one-year-old smolts for stocking purposes. In the past, experimental alterations in fish cultural practices have not succeeded in providing a dependable supply. Large and frequently unexplained mortalities of hatchery-reared fish have occurred in all stages of development.

* * * * *

MASSIVE PROGRAM TO INTRODUCE FALL CHINOOK SALMON RUN IN UPPER WILLAMETTE RIVER:

Plans for the construction of new fish passage facilities at Willamette Falls at Oregon City, Ore., were almost completed in early 1964. The new facilities will make it possible for fall chinook salmon to reach the upper Willamette River to spawn. (The upper river already has steelhead, coho salmon, and spring chinook salmon.) In conjunction with the new fishway, approximately $7\frac{1}{2}$ million young fall chinook are being released in the upper river in the vicinity of Eugene, Corvallis, and Harrisburg, Ore. Some fish were also being released in the lower areas of major tributary streams above the falls. Planting began in mid-February and will continue through April or May 1964.



Chinook Salmon

The young fall chinook salmon needed to stock the Willamette River were raised in the Eagle Creek National Fish Hatchery operated by the U. S. Bureau of Sport Fisheries and Wildlife, and in the Skamania Hatchery operated by Washington State. Surveys conducted by the Fish Commission of Oregon show that the Willamette River above the falls contains many spawning and rearing areas satisfactory for fall chinook salmon. Officials of the U. S. Fish and Wildlife Service said the joint effort of Federal and State agencies on the Willamette River is indicative of the cooperation which has prevailed throughout the program of salmon rehabilitation which began in 1949. (Northwest Regional Information Office, U. S. Department of the Interior, February 11, 1964.)

Shrimp

NEW CONTRACTS OPENED FOR FUTURES TRADING IN FROZEN SHRIMP AT CHICAGO:

Rules and specifications applicable to futures trading in frozen shrimp (No. 1 Contract) for delivery in September and November 1964, and January 1965, as issued early this year by the Chicago Mercantile Exchange, Chicago, Ill., are as shown on page 31.

Following issuance of the rules and specifications on page 31, the Board of Governors of the Chicago Mercantile Exchange, at a meeting held on February 6, 1964, voted to open new contracts for small-

CLASSIFICATION AND GRADE: All futures contracts for Frozen Shrimp shall be U. S. Grade "A" raw, frozen, grooved, headless with a count of 15/20 to the pound and shall be restricted to the catch of domestic boats leaving from and returning to domestic ports. All shrimp must meet the requirements of standards as promulgated by the U. S. Department of Interior, Fish and Wildlife Service.

TRADING UNIT ON FUTURES CALL: All transactions cleared through the Clearing House shall be in units of 5,000 pounds.

FUTURES PRICE FLUCTUATIONS AND LIMITS: The minimum price fluctuation in the futures market will be 1/10¢ per pound, equivalent of $5.00 per contract. A full cent price change equals $50.00 per contract.

Daily fluctuations are limited to 4¢ (400 points) per pound, upward or downward from the previous day's settling price.

DELIVERIES AND SUBSTITUTIONS ON THE FUTURES CALL: To qualify for delivery Frozen Shrimp shall be tendered for delivery in accordance with requirements of the Exchange rules and with specifications announced by the Board of Governors prior to the opening of the contract. The weight of a delivery unit shall be 5,000 pounds and the grade thereof shall comply with the contract of sale subject to such substitutions as are allowed.

A delivery unit of 5,000 pounds shall consist of 100 master cartons, each master carton containing ten 5-pound packages. The unit shall consist of not more than 3 lots or sub-lots with no lot or sub-lot weighing less than 1,000 pounds. The entire unit must be processed by one packer and must be stored during any one calendar month. Each delivery unit must be uniform as to species.

Frozen Shrimp which have been in storage more than eight months are not deliverable except that a delivery unit delivered in accordance with the rules during a delivery month is eligible for re-delivery through that month.

Allowable variations in quantity of a delivery unit are as follows: Minimum delivery unit: 4,750 pounds—95 master cartons of 50 pounds each. Maximum delivery unit: 5,250 pounds—105 master cartons of 50 pounds each. A weight tolerance of 3% shall be permitted. Payment shall be made on the basis of the exact quantity delivered.

All shrimp delivered on Exchange contracts shall be of good pack, glazed and packed in paperboard cartons which must meet all Federal regulations governing labeling and packing.

All shrimp shall conform in every respect to the provision of the Federal Food, Drug and Cosmetic Act together with all regulations promulgated thereunder.

Inspection certificates must be in good standing up to 5:00 P.M. on the business day following day of tender.

Par delivery shall be frozen shrimp in approved cold storage warehouses in the Dallas-Fort Worth, Texas, area. Delivery in other approved cold storage warehouses in the eight states of Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina, and South Carolina may be made at 1¢ a pound discount.

Brown, white, and pink Shrimp are deliverable at par but each delivery unit must be uniform.

PERMISSIBLE SUBSTITUTIONS: Frozen shrimp with a count of less than 15 to the pound shall be deliverable at par. Frozen shrimp with a count of 21/25 to the pound shall be deliverable with an allowance of 7¢ a pound. Grade B shrimp meeting all other requirements are deliverable at 4¢ a pound allowance. Each delivery unit must be uniform as to count per pound.

INSPECTION CERTIFICATES: Inspections will be made for members only and in the order of applications filed except precedence shall be given to inspections relating to transactions made on Exchange.

An official inspection certificate shall be final. No re-inspection upon the same application shall be permitted.

No member shall order an official inspection on another member's goods without the written order of such member.

An official inspection certificate on Frozen Shrimp issued by the Exchange shall state the location and the grade established. It shall bear the signature of the President or Assistant to the President and the seal of the Exchange. It shall state the date of inspection and the time when the certificate expires. This certificate shall be based upon an inspection certificate of the United States government and such government certificate (or a copy thereof) shall in all cases accompany the Exchange certificate.

The removal of the commodity from the place or location designated on the inspection certificate invalidates the certificate.

The charge for inspection shall be the cost plus 50¢ per lot for Exchange certificate.

LIFE OF INSPECTION CERTIFICATE. An Exchange inspection certificate for quality or weights of frozen shrimp in cold storage shall expire on the first business day of the sixth month following date of inspection provided the shrimp have remained in the same warehouse and have been kept under proper refrigeration in the meantime.

STORAGE CHARGES ON FUTURES CALL TO BE ON A PRO RATA BASIS. On all deliveries made on the futures call the seller must assume storage up to 5 P.M. on the second business day after the date of delivery. The proration shall be on the basis of 1/30th of the prevailing monthly storage rate at the particular warehouse raised to the nearest 5¢ and multiplied by the number of days remaining to the next storage expiration date (all months figured on the basis of 30 days). In no case shall handling charges be included in such proration. The storage charges shall be paid in advance by the person holding shrimp on the storage expiration date and pro rata charges prepaid by such holder shall be added to and shown on the tender notice.

SPECULATIVE POSITION LIMITS. No member for himself or for a customer, and no firm for its own account or for the account of a customer, may carry, control, or have a proprietary interest in more than a total of 200 Frozen Shrimp contracts with a maximum of 200 in any one contract month, nor shall any individual, customer, or firm exceed the above limits in any single day's trading.

TRADING HOURS. From 9:25 A.M. to 12:45 P.M.

COMMISSION CHARGES. The uniform minimum fee for the purchase, sale, or purchase and sale of a shrimp futures contract is $18.00 per unit.

WAREHOUSES APPROVED FOR SHRIMP DELIVERIES:

Alford Refrigerated Warehouses, Inc.—260, McBride Lane, Corpus Christi, Tex.

Alford Refrigerated Warehouses, Inc.—318 Cadiz Street, Dallas, Tex.

Houston Terminal Warehouse & Cold Storage Co.—Houston, Texas

Ingram Freezers—Dallas, Texas

Merchants Cold Storage Co.—Fort Worth, Texas

New Orleans Cold Storage & Warehouse Co. Ltd.—124 Airline Highway, Metairie, La.

Texas Ice and Refrigerating Co.—Fort Worth, Texas

U. S. Cold Storage Corp.—Fort Worth, Texas

er size shrimp (used for breading, soups, etc.) The new contract known as No. 2 Contract with delivery months of October and December 1964, and February 1965, were listed for trading on the Chicago Mercantile Exchange on February 17, 1964. The No. 2 Contract listing rules and specifications on futures trading in smaller sizes of frozen shrimp, as announced and issued by the Chicago Mercantile Exchange follow:

CLASSIFICATION AND GRADE: All futures contracts for Frozen Shrimp shall be U. S. Grade "A" raw, frozen, headless with a count of 31/35 to the pound and shall be restricted to the catch of domestic boats leaving from and returning to domestic ports. All shrimp must meet the requirements of standards as promulgated by the U. S. Department of Interior, Fish and Wildlife Service.

TRADING UNIT ON FUTURES CALL: All transactions cleared through the Clearing House shall be in units of 5,000 pounds.

FUTURES PRICE FLUCTUATIONS AND LIMITS: The minimum price fluctuation in the futures market will be 1/10¢ per pound, equivalent of $5.00 per contract. A full cent price change equals $50.00 per contract.

Daily fluctuations are limited to 4¢ (400 points) per pound, upward or downward from the previous day's settling price.

DELIVERIES AND SUBSTITUTIONS ON THE FUTURES CALL: To qualify for delivery Frozen Shrimp shall be tendered for delivery in accordance with requirements of the Exchange rules and with specifications announced by the Board of Governors prior to the opening of the contract. The weight of a delivery unit shall be 5,000 pounds and the grade thereof shall comply with the contract of sale subject to such substitutions as are allowed.

A delivery unit of 5,000 pounds shall consist of 100 master cartons, each master carton containing ten 5-pound packages. The unit shall consist of not more than 3 lots or sub-lots with no lot or sub-lot weighing less than 1,000 pounds. The entire unit must be processed by one packer and must be stored during any one calendar month. Each delivery unit must be uniform as to species.

Frozen Shrimp which have been in storage more than eight months are not deliverable except that a delivery unit delivered in accordance with the rules during a delivery month is eligible for re-delivery through that month.

Allowable variations in quantity of a delivery unit are as follows: Minimum delivery unit: 4,750 pounds—95 master

cartons of 50 pounds each. Maximum delivery unit: 5,250 pounds—105 master cartons of 50 pounds each. A weight tolerance of 3% shall be permitted. Payment shall be made on the basis of the exact quantity delivered.

All shrimp delivered on Exchange contracts shall be of good pack, glazed and packed in paperboard cartons which must meet all Federal regulations governing labeling and packing.

All shrimp shall conform in every respect to the provision of the Federal Food, Drug and Cosmetic Act together with all regulations promulgated thereunder.

Inspection certificates must be in good standing up to 5:00 P.M. on the business day following day of tender.

Par delivery shall be frozen shrimp in approved cold storage warehouses in the Dallas-Fort Worth, Texas, area. Delivery in other approved cold storage warehouses in the eight states of Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, North Carolina, and South Carolina may be made at 1¢ a pound discount.

Brown, white, and pink Shrimp are deliverable at par but each delivery unit must be uniform.

PERMISSIBLE SUBSTITUTIONS: Frozen shrimp with a count of 36/42 to the pound and meeting all other requirements of these rules shall be deliverable at 5¢ a pound allowance. Frozen shrimp with a count of 43/50 to the pound and meeting all other requirements of these rules shall be deliverable at 10¢ a pound allowance, and Frozen Shrimp with a count of 51/60 shall be deliverable at 15¢ a pound allowance. Grade B shrimp meeting all other requirements of these rules shall be deliverable at 4¢ a pound allowance. Each delivery unit must be uniform as to count per pound.

INSPECTION CERTIFICATES: Inspections will be made for members only and in the order of applications filed except precedence shall be given to inspections relating to transactions made on Exchange.

An official inspection certificate shall be final. No re-inspection upon the same application shall be permitted.

No member shall order an official inspection on another member's goods without the written order of such member.

An official inspection certificate on Frozen Shrimp issued by the Exchange shall state the location and the grade established. It shall bear the signature of the President or Assistant to the President and the seal of the Exchange. It shall state the date of inspection and the time when the certificate expires. This certificate shall be based upon an inspection certificate of the United States government and such government certificate (or a copy thereof) shall in all cases accompany the Exchange certificate.

The removal of the commodity from the place or location designated on the inspection certificate invalidates the certificate.

The charge for inspection shall be the cost plus 50¢ per lot for Exchange certificate.

LIFE OF INSPECTION CERTIFICATE: An Exchange inspection certificate for quality or weights of frozen shrimp in cold storage shall expire on the first business day of the sixth month following date of inspection provided the shrimp have remained in the same warehouse and have been kept under proper refrigeration in the meantime.

STORAGE CHARGES ON FUTURES CALL TO BE ON A PRO RATA BASIS: On all deliveries made on the futures call the seller must assume storage up to 5 P.M. on the second business day after the date of delivery. The proration shall be on the basis of 1/30th of the prevailing monthly storage rate at the particular warehouse raised to the nearest 5¢ and multiplied by the number of days remaining to the next storage expiration date (all months figured on the basis of 30 days). In no case shall handling charges be included in such proration. The storage charges shall be paid in advance by the person holding shrimp on the storage expiration date and pro rata charges prepaid by such holder shall be added to and shown on the tender notice.

SPECULATIVE POSITION LIMITS: No member for himself or for a customer, and no firm for its own account or for the account of a customer, may carry, control, or have a proprietary interest in more than a total of 200 Frozen Shrimp contracts with a maximum of 200 in any one contract month, nor shall any individual, customer, or firm exceed the above limits in any single day's trading.

Note: See Commercial Fisheries Review, December 1963 p. 42.

* * * * *

UNITED STATES SHRIMP SUPPLY INDICATORS, JANUARY 1964:

Item and Period	1964	1963	1962	1961	1960
		(1,000 Lbs., Heads-Off)			
Total landings, So. Atl. and Gulf States:					
March	-	3,632	3,331	4,754	4,099
February	-	3,986	4,123	3,910	3,784
January	5,600	3,993	3,840	5,686	5,402
December	-	9,500	8,615	6,538	7,099
November	-	13,212	12,177	9,996	14,454
January-December	-	138,700	105,839	91,396	141,035
Quantity canned, Gulf States 1/:					
March	-	92	86	35	117
February	-	281	241	90	204
January	230	592	492	183	266
December	-	2,175	1,879	816	894
November	-	2,495	2,727	2,175	1,535
January-December	-	29,468	23,322	14,500	26,394
Frozen inventories (as of end of each mo.) 2/:					
March 31	-	27,970	16,607	31,345	23,232
February 28	-	28,039	19,012	37,612	29,063
January 31	-	28,487	21,328	37,842	34,332
December 31	-	3/45,764	31,577	19,755	40,913
November 30	-	3/42,142	27,500	20,668	37,264
October 31	-	3/37,418	21,315	17,811	31,209
Imports 4/:					
March	-	13,616	9,658	10,347	8,545
February	-	12,100	10,599	8,932	7,657
January	-	13,139	12,907	12,338	8,596
December	-	16,296	15,798	15,442	12,411
November	-	14,759	17,964	14,852	13,516
January-December	-	151,530	141,183	126,268	113,418
		(¢/lb., 26-30 Count, Heads-Off)			
Ex-vessel price, all species, So. Atl. & Gulf Ports:					
March	-	85.5	80.9	56.0	56.3
February	-	85.7	78.9	53.5	51.8
January	60-69	85.0	76.3	52.5	49.5
December	-	5/54-65	82.9	75.2	54.2
November	-	5/52-62	84.5	73.5	54.0
October	-	5/51-64	90.0	68.7	53.0
September	-	5/55-64	90.9	70.1	52.2
August	-	59.0	83.6	66.1	52.0
Wholesale price froz. brown (5-lb. pkg.) Chicago, Ill.:					
March	-	102-106	94-95	69-71	65-68
February	-	102-106	93-95	69-71	65-67
January	78-83	102-106	91-94	69-71	64-66
December	-	75-82	101-107	91-92	68-70
November	-	71-78	105-110	89-92	69-73
October	-	67-75	108-115	83-90	69-73
September	-	73-77	113-118	87-90	65-70
August	-	75-81	110-112	76-91	64-67

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.5. The figures in the section (Quantity canned, Gulf States) have been completely revised beginning with February 1963 on the basis of a new conversion factor (formerly 33.0 pounds per case).
2/Raw headless only; excludes breaded, peeled and deveined, etc.
3/Inventory of October 31, 1963, includes 1,203,000 pounds; November 30, 1963, includes 1,189,000 pounds; and December 31, 1963, includes 1,256,000 pounds for firms not reporting previously.
4/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
5/Range in prices at Tampa, Fla.; Morgan City, La.; area; Port Isabel and Brownsville, Texas, only.
Note: January 1964 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.

(Table continued on next column.)

Tuna

FISHING BASE IN PALAU ISLANDS PLANNED BY CALIFORNIA FIRM:

A California tuna-packing firm has plans under way to establish a tuna-fishing base in the Palau Islands (U. S. Trust Territory of the Pacific Islands in the Pacific Ocean east of the Philippines). Two representatives of the United States tuna cannery were in Koror, Palau, in February 1964 when they met with officials of a local construction company to discuss construction bid plans.

One of the first construction items discussed was housing quarters needed by the middle of May for some 120 fishermen. Other facilities for the proposed base to be built or installed on Malakai Island include a 1,200-ton fish-storage freezer, ice-making machines, water-storage tanks, and office space. Bid negotiations for actual construction of the plant are to begin in mid-May and it is planned to have the plant in operation by July 1, 1964.

Plans call for six 25-gross-ton tuna vessels to begin operating from Koror's main port with 72 Okinawans and 48 Palauans as crewmen and fishermen, according to an Economic Development Officer of the Trust Territory. Under the provisions of the contract signed by the Trust Territory and the California firm's officials, the Palauans will be trained as tuna fishermen and eventually the tuna-fishing vessels will be manned completely by them.

The Trust Territory Officer said that expansion of tuna fishing in other parts of the Territory will depend to a great degree on the success of the initial program in Palau. (Press release, Trust Territory of the Pacific Islands, Saipan, February 17, 1964.)

United States Fisheries

COMMERCIAL FISHERY LANDINGS, 1963:

Total Landings: Fish and shellfish landings in the United States in 1963 were down 11.5 percent as compared with 1962. Landings were about 600 million pounds less than in 1962--due mainly to reduced catches of menhaden, salmon, whiting, and ocean perch.

Menhaden: Landings in 1963 totaled about 1.7 billion pounds--524 million pounds less than during 1962. Production was down in every state except in North Carolina where the catch of 190 million pounds was 67 million pounds more than in the previous year. The North Carolina increase resulted from a productive fishery in the last two months of the year.

Salmon: On the basis of the reported pack of canned salmon, it is estimated that the 1963 catch in Alaska was approximately 214 million pounds--about 60 million pounds less than in 1962.

Shrimp: There was a significant gain in landings of South Atlantic and Gulf shrimp during 1963 due to sharply increased landings in the Gulf States. Production in the South Atlantic and Gulf areas totaled 220 million pounds--an increase of 52 million pounds or 31 percent.

Tuna: Landings (including bonito) in California amounted to about 315 million pounds--1 percent more than in 1962. Atlantic Coast landings amounted to 12 million pounds as compared with 7.2 million pounds the previous year.

Mackerel: Pacific mackerel landings in 1963 amounted to 37 million pounds--down 11 million pounds as compared with 1962.

United States Commercial Fishery Landings of Certain Species, 1962-63

Species	1/1963	1962
	...(1,000 Lbs.)...	
Anchovies, Calif.	3,300	2,764
Cod, Atlantic:		
Maine	2,000	2,260
Mass.	33,600	40,647
Other	3,600	4,003
Total cod	39,200	46,910
Crabs:		
Dungeness, Alaska	11,800	8,990
King, Alaska	77,000	52,782
Haddock:		
Maine	2,800	2,545
Mass.	119,600	131,558
Other	200	147
Total haddock	122,600	134,250
Halibut: 2/		
Alaska	22,400	27,682
Wash., Oreg., and Calif.	11,800	12,657
Total halibut	34,200	40,339
Herring:		
Maine	147,000	156,699
Alaska	31,000	33,876
Industrial Fish, Maine and Mass. 3/	47,900	31,680
Mackerel:		
Jack, Calif.	97,500	89,979
Pacific	37,300	48,579
Menhaden	1,726,000	2,249,917
Ocean perch, Atl.	108,200	123,983
Pollock	14,300	16,333
Salmon	280,000	314,566
Sardine, Pacific	6,000	15,363
Scallops, sea, New Bedford (meats)	19,200	24,634
Shrimp (heads-on):		
So. Atl. and Gulf	220,300	167,804
Other	18,700	23,302
Total shrimp	239,000	191,106
Tuna	315,000	312,157
Whiting:		
Maine	15,900	17,832
Mass.	55,300	75,384
Other	9,600	11,872
Total whiting	80,800	105,088
Total all above items	3,437,300	3,999,995
Other 4/	1,212,700	1,256,163
Grand total	4,650,000	5,256,158

1/Preliminary.
2/Dressed weight.
3/Excludes menhaden.
4/Includes landings for species not listed.
Note: Finfish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported in meats only.

Landings of jack mackerel (97 million pounds) increased about 7.5 million pounds.

* * * * *

FISH STICKS AND PORTIONS, OCTOBER-DECEMBER 1963:

United States production of fish sticks and fish portions amounted to 45.3 million pounds during the fourth quarter of 1963, according to preliminary data. Compared with the same quarter of 1962, this was a gain of 3.0 million pounds or 7 percent. Fish sticks (20.2 million pounds) were up 1.2 million pounds or 6 percent, while fish portions (25.1 million pounds) were up 1.8 million pounds or 8 percent.

Cooked fish sticks (18.5 million pounds) made up 92 percent of the October-December 1963 fish stick total. There were 24.3 million pounds of breaded fish portions produced, of which 19.8 million pounds were raw. Unbreaded fish portions amounted to 796,000 pounds.

The Atlantic States remained the principal area in the production of both fish sticks and fish portions, with 16.7 and 14.0 million pounds, respectively. The Inland and Gulf States ranked second with 2.0 million pounds of fish sticks and 10.3 million pounds of fish portions. The remaining 2.3 million pounds of fish sticks and fish portions were produced by firms in the Pacific States.

Table 1 - U.S. Production of Fish Sticks by Months and Type, October-December 1963 1/

Month	Cooked	Raw	Total
	(1,000 Lbs.)		
October	7,201	882	8,083
November	5,790	394	6,184
December	5,526	429	5,955
Total 4th Qtr. 1963 1/	18,517	1,705	20,222
Total 4th Qtr. 1962	17,563	1,467	19,030
Total 1963 1/	73,898	4,932	78,830
Total 1962	66,801	5,416	72,217

1/Preliminary.

Table 2 - U. S. Production of Fish Sticks by Areas, October-December 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	20	16,742	23	14,989
Inland & Gulf States	7	1,977	5	2,368
Pacific Coast States	9	1,503	10	1,673
Total	36	20,222	38	19,030

1/Preliminary.
2/Revised.

Table 3 - U.S. Production of Fish Sticks by Months, 1959-1963

Month	1/1963	2/1962	1961	1960	1959
	(1,000 Lbs.)				
January	7,554	6,082	6,091	5,511	6,277
February	8,241	6,886	7,097	6,542	6,352
March	8,053	7,658	7,233	7,844	5,604
April	6,546	5,719	5,599	4,871	4,717
May	5,750	5,643	5,129	3,707	4,407
June	6,125	5,117	4,928	4,369	4,583
July	4,836	3,740	3,575	3,691	3,790
August	5,674	5,760	6,927	5,013	3,879
September	5,829	6,582	5,206	5,424	5,353
October	8,083	6,698	6,133	6,560	5,842
November	6,184	6,305	6,288	6,281	4,831
December	5,955	6,027	5,618	5,329	4,743
Total	78,830	72,217	69,824	65,142	60,378

1/Preliminary.
2/Revised.

Table 4 - U.S. Production of Fish Portions by Months and Type, October-December 1963 1/

Month	Breaded			Unbreaded	Total
	Cooked	Raw	Total		
	(1,000 Lbs.)				
October	2,010	7,510	9,520	311	9,831
November	1,283	6,295	7,578	278	7,856
December	1,137	6,030	7,167	207	7,374
Tot. 4th Qtr. 1963 1/	4,430	19,835	24,265	796	25,061
Tot. 4th. Qtr. 1962	4,132	18,337	22,469	827	23,296
Tot. 1963 1/	16,482	74,738	91,220	3,025	94,245
Total 1962	14,007	62,290	76,297	2,381	78,678

1/Preliminary.

Table 5 - U. S. Production of Fish Portions by Areas, October-December 1963 and 1962

Area	1/1963		2/1962	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	14,025	23	13,833
Inland & Gulf States	10	10,310	11	8,775
Pacific Coast States	8	726	7	688
Total	40	25,061	41	23,296

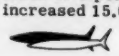
1/Preliminary.
2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1959-1963

Month	1/1963	2/1962	1961	1960	1959
	(1,000 Lbs.)				
January	8,173	5,077	4,303	3,632	2,692
February	7,361	6,360	4,902	3,502	3,025
March	8,835	7,036	5,831	4,706	3,225
April	7,919	6,408	4,484	3,492	2,634
May	7,293	5,818	3,879	3,253	2,684
June	8,774	6,137	4,039	3,995	3,247
July	4,523	4,679	3,962	4,088	2,227
August	6,685	6,687	4,963	3,558	2,796
September	9,621	7,180	5,745	4,631	3,558
October	9,831	9,871	6,759	5,275	4,314
November	7,856	7,406	5,789	4,790	3,483
December	7,374	6,019	5,191	4,459	3,262
Total	94,245	78,678	59,847	49,381	37,147

1/Preliminary.
2/Revised.

Total production of fish sticks and fish portions during 1963 (173.1 million pounds) was 22.2 million pounds or 15 percent above 1962. Fish sticks (78.8 million pounds) were up 6.6 million pounds or 9 percent; and fish portions (94.3 million pounds) increased 15.6 million pounds or 20 percent.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED:

December 1963: During December 1963, a total of 33 vessels of 5 net tons and over was issued first documents as fishing craft as compared with 12 in December 1962. There were 27 documents cancelled for fishing vessels in December 1963 as compared with 24 in December 1962.

Table 1 - U. S. Fishing Vessels 1/--Documentations Issued and Cancelled, by Areas, December 1963 with Comparisons

Area (Home Port)	December		January-December	
	1963	1962	1963	1962
	(Number)			
Issued first documents 2/:				
New England	2	1	23	28
Middle Atlantic	1	1	18	3
Chesapeake	6	2	66	43
South Atlantic	6	1	77	47
Gulf	10	4	239	110
Pacific	8	3	160	130
Great Lakes	-	-	5	5
Puerto Rico	-	-	2	2
Total	33	12	590	368
Removed from documentation 3/:				
New England	5	4	48	24
Middle Atlantic	3	5	47	39
Chesapeake	2	-	25	23
South Atlantic	4	-	53	38
Gulf	7	6	118	104
Pacific	5	8	87	111
Great Lakes	1	1	15	22
Hawaii	-	-	3	3
Puerto Rico	-	-	-	1
Total	27	24	396	365

1/For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, December 1963

Gross Tonnage	Issued 2/	Cancelled 3/
	(Number)	
5-9	7	7
10-19	10	9
20-29	6	2
30-39	1	1
40-49	-	3
50-59	-	1
60-69	2	2
70-79	5	-
80-89	1	-
90-99	-	1
110-119	1	-
130-139	-	1
Total	33	27

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/Vessels issued first documents as fishing craft were built: 23 in 1963; 1 in 1959; 1 in 1958; 1 in 1957; 6 prior to 1951; and 1 unknown.
3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

* * * * *

1963 with Comparisons: The downward trend in United States vessels receiving first documents as fishing vessels was reversed in 1963 (tables 1 & 2) when documents issued

Table 1 - U. S. Fishing Vessels 1/--Documents Issued and Canceled, 1938-63

Year	Issued			Canceled 2/
	First Documents	Redocuments	Total	
	(Number)			
1963	569	21	590	396
1962	352	16	368	365
1961	410	20	430	341
1960	408	24	432	290
1959	479	34	513	3/
1958	684	29	713	3/
1957	601	18	619	3/
1956	521	17	538	3/
1955	418	23	441	3/
1954	717	28	745	3/
1953	729	25	754	3/
1952	675	24	699	3/
1951	780	28	808	3/
1950	812	29	841	3/
1949	1,002	42	1,044	3/
1948	1,184	38	1,222	3/
1947	1,300	48	1,348	3/
1946	1,085	117	1,202	3/
1945	741	3/	3/	3/
1944	635	3/	3/	3/
1943	358	3/	3/	3/
1942	358	3/	3/	3/
1941	354	3/	3/	3/
1940	320	3/	3/	3/
1939	357	3/	3/	3/
1938	376	3/	3/	3/

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
3/Data not compiled.

Table 2 - U. S. Fishing Vessels 1/--Documents Issued by Tonnage Groups, 1955-1963

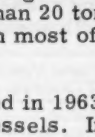
Tons	1963 2/	1962 2/	1961 2/	1960 3/	1959 3/	1958 3/	1957 3/	1956 3/	1955 3/
	(Number)								
5-9	123	63	134	227	231	241	246	252	214
10-19	178	137	130	90	96	111	121	109	88
20-29	61	33	37	33	69	107	69	59	41
30-39	23	33	27	16	34	135	110	62	36
40-49	35	15	19	18	25	65	25	4	12
50-59	16	9	21	5	10	13	13	5	5
60-69	33	17	21	2	2	1	1	2	1
70-79	73	36	17	-	-	-	-	2	4
80-89	12	3	2	1	1	1	1	-	-
90-99	2	1	3	-	2	3	-	-	2
100-109	3	1	-	-	-	-	2	4	4
110-119	3	3	1	1	1	-	1	3	1
120-129	-	1	-	-	-	-	2	8	1
130-139	-	2	1	1	1	-	3	4	2
140-149	9	-	-	1	1	-	-	-	2
150-159	1	-	-	2	-	-	-	3	2
160-169	1	-	1	-	1	1	-	-	-
170-179	-	-	-	-	1	-	2	1	-
180-189	-	-	-	-	2	3	2	3	2
190-199	-	-	1	1	-	1	-	-	1
200-249	3	4	2	2	-	1	-	-	-
250-299	5	2	2	2	1	-	-	-	-
300-349	2	1	1	6	-	1	1	-	-
350-399	-	-	2	-	1	-	2	-	-
450-499	3	2	1	-	-	-	-	-	-
500-549	-	2	1	-	-	-	-	-	-
550-599	-	1	3	-	-	-	-	-	-
600-649	1	-	-	-	-	-	-	-	-
750-799	2	1	1	-	-	-	-	-	-
800-849	1	1	2	-	-	-	-	-	-
Total	590	368	430	408	479	684	601	521	418

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
2/Based on gross tons. Redocumented vessels that were previously removed from the records are included in the following years: 1961, 20; 1962, 16; and 1963, 21.
3/Based on net tons. Includes only vessels receiving first documents.

showed an increase of 60 percent over 1962. Although much of the gain was concentrated in vessels of less than 20 tons, there was also some increase in most of the larger tonnage groups.

Documents issued in 1963 exceeded cancellations by 194 vessels. In the previous year, documents cancelled almost equalled those issued.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



U. S. Foreign Trade

IMPORTS OF FISH MEAL AND SCRAP BY CUSTOMS DISTRICTS, JANUARY-DECEMBER 1963:

United States imports of fish meal and scrap in 1963 totaled 383,107 short tons, according to preliminary data. About 83.3 percent of the fish meal and scrap imports in 1963 entered through the Customs Districts of Maryland, Georgia, Mobile (Ala.), Galveston (Tex.), San Francisco (Calif.), Los Angeles (Calif.), and Washington.

United States Imports of Fish Meal and Scrap by Customs Districts, January-December 1963 1/

Customs Districts	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	(Short Tons)												
Maine and New Hampshire	50	602	-	-	500	50	352	551	460	120	679	500	3,864
Vermont	29	-	-	-	-	35	65	-	96	30	-	-	255
Massachusetts	-	852	80	15	-	60	90	160	185	29	72	67	1,610
St. Lawrence (N.Y.)	-	-	33	-	-	-	30	60	-	30	-	-	153
Buffalo (N.Y.)	-	-	-	-	-	-	-	3	-	-	-	-	3
New York (N.Y.)	650	880	-	1,028	501	300	1,102	220	578	40	129	242	5,680
Philadelphia (Pa.)	-	1,414	728	250	-	100	100	-	-	-	-	222	2,814
Maryland	551	4,684	4,682	1,492	2,645	1,298	661	2,362	1,758	6,338	882	7,074	34,427
North Carolina	108	-	3,583	1,102	1,102	-	772	1,268	937	1,378	1,433	331	12,014
Georgia	2,589	5,239	12,897	2,035	9,532	2,147	4,964	6,510	3,145	4,253	-	3,351	56,662
Florida	-	-	-	-	-	-	-	-	518	-	-	548	1,066
Mobile (Ala.)	4,132	8,135	11,195	2,019	3,972	4,058	4,961	5,422	9,399	4,435	1,314	6,335	65,377
New Orleans (La.)	2,949	-	-	-	551	-	1,488	-	-	-	1,540	-	6,528
Sabine (Tex.)	546	546	551	551	-	-	557	-	-	1,114	-	557	4,422
Galveston (Tex.)	1,101	8,829	3,060	2,427	4,781	2,372	2,579	4,084	8,829	2,989	4,159	2,328	47,538
Los Angeles (Calif.)	-	1,828	2,662	1,492	1,148	1,009	4,295	6,405	2,643	2,639	330	1,187	25,639
San Francisco (Calif.)	2,646	4,290	4,027	9,568	2,225	1,167	6,013	12,648	2,978	4,063	3,154	3,129	55,908
Oregon	308	-	219	479	219	165	-	-	-	-	343	110	1,843
Washington	1,782	2,140	2,311	2,906	2,710	3,713	4,892	2,405	2,125	2,943	2,360	3,136	33,423
Hawaii	-	40	591	-	15	55	8,262	20	15	-	100	-	9,098
Montana & Idaho	-	-	10	-	-	-	-	-	-	-	-	-	10
Dakota	134	60	158	115	136	245	257	385	190	195	210	-	2,085
Duluth (Minn.) and Superior (Wisc.)	743	530	917	1,070	1,015	1,445	1,538	980	435	456	263	550	9,942
Michigan	167	17	34	58	97	233	188	503	375	397	401	62	2,532
Chicago (Ill.)	-	-	157	-	-	-	22	-	-	-	-	-	179
Colorado	-	-	-	-	-	-	35	-	-	-	-	-	35
Grand total	18,495	40,086	47,895	26,607	31,149	18,452	43,223	43,987	34,666	31,449	17,369	29,729	383,107

1/Preliminary.

* * * * *

AIRBORNE IMPORTS OF FISHERY PRODUCTS, NOVEMBER 1963:

Airborne fishery imports into the United States in November 1963 were up 15.3 percent in quantity and 2.0 percent in value from those in the previous month. Total airborne imports during January-November 1963 were about the same as those in the same period of 1962.

Raw headless shrimp continued to make up the bulk of the airborne shrimp imports--in November 1963, shipments consisted of 454,857 pounds of fresh or frozen raw headless, 20,735 pounds of frozen raw peeled, and 53,006 pounds of unclassified shrimp. Over 92 percent of the airborne shrimp arrivals in November entered through the U. S. Customs District of Florida. The remainder entered through the Customs Districts of New Orleans (La.), Laredo (Tex.), Los Angeles (Calif.), and San Francisco (Calif.).

Airborne imports of shellfish other than shrimp in November consisted mainly of 46,521 pounds of fresh or frozen spiny lobster products. All of the airborne imports of spiny lobsters entered through the Customs District of Florida.

Fish fillets from Mexico were the leading finfish products imported by air in November.

U. S.1/ Airborne Imports of Fishery Products, January-November 1963 with Comparative Data

Product and Origin2/	1963 November Qty.3/	1963 November Value4/	1963 Jan.-Nov. Qty.3/	1963 Jan.-Nov. Value4/	1962 Jan.-Nov. Qty.3/	1962 Jan.-Nov. Value4/
	1,000 lbs.	US$ 1,000	1,000 lbs.	US$ 1,000	1,000 lbs.	US$ 1,000
Fish:						
Mexico	19.6	3.6	264.8	70.0	964.2	160.2
British Honduras	1.8	0.5	43.5	10.7	34.2	7.5
Honduras	-	-	16.5	4.3	0.8	0.3
Japan	-	-	2.0	8.2	-	-
United Kingdom	0.4	0.7	3.5	7.4	0.5	1.2
Iran	-	-	1.2	7.4	13.9	142.9
France	4.9	4.5	10.1	10.6	0.3	0.7
Rumania	-	-	-	-	1.9	15.9
Panama	-	-	0.9	0.4	7.8	1.3
U.S.S.R.	-	-	26.8	70.2	-	-
Canada	-	-	-	-	22.1	17.6
Costa Rica	-	-	-	-	5.6	0.9
Other countries	-	-	3.5	0.9	39.0	12.8
Total Fish	26.7	9.3	372.8	190.1	1,090.3	361.3
Shrimp:						
Guatemala	-	-	141.6	74.0	292.8	146.7
El Salvador	39.7	17.5	297.7	190.2	623.5	387.4
Honduras	-	-	99.8	52.3	36.5	23.3
Nicaragua	27.8	15.5	505.0	174.6	996.4	339.6
Costa Rica	15.8	5.4	598.3	284.3	679.3	303.1
Panama	98.8	55.3	1,541.3	831.5	1,739.3	970.2
Venezuela	338.6	140.7	4,500.5	2,096.8	3,033.3	1,644.2
Ecuador	-	-	111.6	39.4	12.2	3.4
France	-	-	2.6	0.9	-	-
Mexico	-	-	13.2	6.9	24.8	9.1
Netherlands Antilles	-	-	-	-	3.1	2.7
Argentina	-	-	-	-	10.5	4.8
British Honduras	7.9	8.6	7.9	8.6	-	-
Total Shrimp	528.6	243.0	7,819.5	3,759.5	7,451.7	3,834.5
Shellfish other than Shrimp:						
Mexico	3.5	3.2	101.1	60.8	87.7	55.9
British Honduras	34.6	28.1	344.5	281.8	266.0	176.4
El Salvador	-	-	5.0	3.6	6.2	4.6
Honduras	-	-	17.0	7.0	140.7	103.9
Nicaragua	-	-	164.5	100.0	1.2	0.6
Costa Rica	-	-	73.8	60.1	5.6	4.8
Jamaica	0.8	0.7	66.5	50.2	30.0	21.3
Netherlands Antilles	12.7	11.8	45.5	32.7	58.0	34.8
Colombia	-	-	8.0	21.7	1.8	5.1
Ecuador	-	-	2.2	1.8	2.6	1.6
Tunisia	-	-	0.8	0.9	-	-
Leeward and Windward Islands	-	-	1.6	0.5	28.7	10.9
British Guiana	-	-	1.7	0.3	-	-
Canada	-	-	213.3	109.2	224.1	91.1
Venezuela	-	-	13.7	6.0	22.3	13.6
Panama	1.9	1.2	5.0	3.8	1.0	1.0
Guatemala	-	-	-	-	12.9	6.3
Bahamas	-	-	5.3	5.2	32.5	11.0
Dominican Republic	-	-	25.3	23.8	29.7	26.5
Yugoslavia	-	-	1.2	0.7	-	-
Trinidad	-	-	-	-	2.3	1.0
Other countries	-	-	2.0	2.9	8.3	12.0
Total Shellfish (except shrimp)	53.5	45.0	1,098.0	773.0	961.6	582.4
Grand Total	608.8	297.3	9,290.3	4,722.6	9,503.6	4,778.2

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.
2/When the country of origin is not known, the country of shipment is shown.
3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
4/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.
Note: These data are included in the over-all import figures for total imports, i.e., these imports are not to be added to other import data published.
Source: United States Airborne General Imports of Merchandise, FT 380, November 1963, U.S. Bureau of Census.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of the airborne imports consists of fresh and frozen products.

* * * * *

PROCESSED EDIBLE FISHERY PRODUCTS, DECEMBER 1963:

United States imports of processed edible fishery products in December 1963 were down 17.1 percent in quantity and 7.4 percent in value from those in the previous month. In December 1963 there was a decline in imports of groundfish fillets, canned sardines in oil, and canned oysters, which was partly offset by higher imports of canned tuna in brine and canned sardines not in oil.

Compared with the same month in 1962, imports in December 1963 were up 3.9 percent in quantity and 16.1 percent in value. The gain was due mainly to larger imports of canned tuna in brine and fish blocks and slabs. There was a decline in imports of canned sardines (in oil and not in oil) and most fish fillet items, particularly swordfish and haddock fillets.

U. S. Imports and Exports of Processed Edible Fishery Products, December 1963 with Comparisons

Item	QUANTITY December 1963	QUANTITY December 1962	QUANTITY Jan.-Dec. 1963	QUANTITY Jan.-Dec. 1962	VALUE December 1963	VALUE December 1962	VALUE Jan.-Dec. 1963	VALUE Jan.-Dec. 1962
	(Millions of Lbs.)				(Millions of $)			
Fish & Shellfish:								
Imports1/	42.9	41.3	535.3	552.0	13.7	11.8	157.4	160.6
Exports2/	4.3	4.8	34.4	35.6	2.1	2.1	16.6	16.0

1/Includes only those fishery products classified by the U. S. Bureau of the Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i.e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).
2/Excludes fresh and frozen.

For the year 1963, imports were down 3.0 percent in quantity and 2.0 percent in value from those in 1962. Fluctuations in individual items were much greater than the overall totals indicate. Imports were down sharply in 1963 for canned sardines in oil and canned salmon. There was also a considerable decline in imports of haddock fillets, flounder fillets, halibut fillets, swordfish fillets, sea catfish fillets, and canned tuna other than albacore in brine. On the other hand, there was a large increase in imports of fish blocks and slabs as well as heavier shipments of ocean perch fillets, yellow pike fillets, canned albacore tuna in brine, canned sardines not in oil, canned crab meat, and canned oysters.

Exports of processed edible fish and shellfish from the United States in December 1963 were up 16.2 percent in quantity and 16.7 percent in value from those in the previous month. In December, all of the leading canned fish export items were exported in larger quantity except canned sardines not in oil.

Compared with the same month in 1962, the exports in December 1963 were down 10.4 percent in quantity but the value was the same in both months. This December there were larger shipments of canned mackerel and canned shrimp, but exports of canned sardines not in oil were sharply lower.

Processed fish and shellfish exports in 1963 were down 3.4 percent in quantity but up 3.8 percent in value from those in 1962. The decline in quantity was due mainly to lower shipments of canned sardines not in oil. There were increases in exports of the higher-priced canned salmon and canned shrimp, as well as larger shipments of canned squid and canned mackerel. Although not covered in the table, exports of frozen shrimp were up sharply in 1963 (increase mostly in exports to Japan), and there was a substantial increase in exports of frozen salmon.

Notes: (1) Prior to October 1963, the data shown were included in news releases on "U. S. Imports and Exports of Edible Fishery Products." Before October 1963, data showing "U.S. Imports of Edible Fishery Products" summarized both manufactured and crude products. At present, a monthly summary of U.S. imports of crude or nonprocessed fishery products is not available, therefore, only imports of manufactured or processed edible fishery products are reported. The import data are, therefore, not comparable to previous reports of "U.S. Imports of Edible Fishery Products."

The export data shown are comparable to previous data in "U.S. Exports of Edible Fishery Products." The export data in this series of articles have always been limited to manufactured or processed products.

(2) See Commercial Fisheries Review, Mar. 1964 p. 31.

Wholesale Prices

EDIBLE FISH AND SHELLFISH, FEBRUARY 1964:

The wholesale price index for edible fish and shellfish (fresh, frozen, and canned) in February 1964 dropped 0.7 percent from the previous month. It was the first decline since November 1963 following a series of price increases through January this year. The decline from January to February was due to lower prices for frozen halibut and salmon, ocean perch fillets, oysters, frozen shrimp, and canned salmon. But these were partly offset by higher February prices for Great Lakes fresh-water fish, fresh shrimp, and several of the other canned fish products. At 109.0 percent of the 1957-59 average, the index this February was 7.9 percent lower than the same month a year earlier when prices, with few exceptions, were higher for nearly all items.

The drawn, dressed, or whole finfish subgroup index in February 1964 was up 3.7 percent from a month earlier, but was lower by 1.5 percent as compared with February a year ago. Largely responsible for the increase from January to February were higher prices at Boston for ex-vessel large haddock (up 13.6 percent), at Chicago for fresh Lake Superior whitefish (up 23.6 percent), and at New York City for Great Lakes round yellow pike (up 26.5 percent). Compared with February 1963, prices this February were lower for all items in the subgroup except for fresh drawn haddock at Boston which this February was priced sharply higher (up 69.3 percent) because of fewer trips and generally high ex-vessel prices.

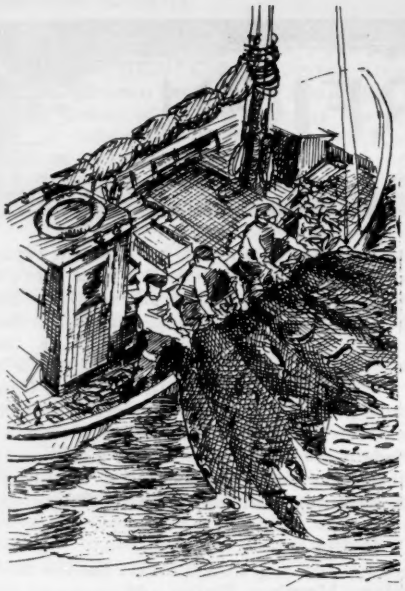
Wholesale Average Prices and Indexes for Edible Fish and Shellfish, February 1964 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			Feb. 1964	Jan. 1964	Feb. 1964	Jan. 1964	Dec. 1963	Feb. 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					109.0	2/109.8	107.5	118.4
Fresh & Frozen Fishery Products:					113.2	113.0	110.5	124.4
Drawn, Dressed, or Whole Finfish:					120.8	116.5	114.4	122.7
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.21	.18	160.2	141.0	133.0	94.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.31	.33	90.2	96.1	96.1	125.6
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.83	.85	116.0	118.4	118.4	133.8
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.58	.47	85.8	69.4	61.2	100.7
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.62	.49	101.6	2/80.3	83.5	113.0
Processed, Fresh (Fish & Shellfish):					114.0	115.4	111.5	128.5
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.58	.59	140.8	142.0	138.4	98.3
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.91	.86	106.6	100.8	95.5	130.7
Oysters, shucked, standards	Norfolk	gal.	7.00	7.63	118.0	128.6	126.5	130.7
Processed, Frozen (Fish & Shellfish):					100.7	102.8	101.3	117.3
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	98.9	98.9	98.9	98.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.40	.39	115.8	114.3	115.8	108.5
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.33	.34	114.0	117.5	121.0	115.7
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.77	.81	91.3	95.5	91.9	123.4
Canned Fishery Products:					102.0	104.7	102.5	108.0
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	21.75	23.50	94.8	102.4	102.4	107.9
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.63	11.63	103.3	103.3	98.2	104.4
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	6.13	5.75	103.9	97.5	97.5	3/100.0
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.09	8.96	116.5	114.9	114.9	119.4

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Revised.

3/New product replaced California canned sardines starting December 1962; entered wholesale price index at 100 under revised procedures of Bureau of Labor Statistics.



Slightly lower prices this February for fresh haddock fillets (down 0.8 percent) at Boston and an 8.2-percent drop in prices for fresh shucked oysters at Norfolk caused a 1.2-percent decline from the previous month in the subgroup index for fresh processed fish and shellfish. Fresh shrimp prices at New York City were higher (up 5.8 percent) than in January but were below February 1963 by 18.4 percent. As compared with February 1963, prices this February were lower for most items in the subgroup and the index was down 11.3 percent. But prices for fresh haddock fillets were a marked exception--they were 43.2 percent higher this February than in the same month in 1963.

The February 1964 processed frozen fish and shellfish subgroup index dropped 2.0 percent from the previous month mainly because of a 4-cent-a-pound drop in wholesale prices for frozen shrimp at Chicago and lower prices for ocean perch fillets. Prices for frozen haddock fillets were up slightly from January to February and increased 6.7 percent from February a year earlier. The February 1964 subgroup index was down 14.2 percent from the same month in 1963 principally due to lower frozen shrimp prices (down 16.0 percent) at Chicago.

Wholesale prices for canned pink salmon in February 1964 were reduced by a leading Pacific Northwest packer and this resulted in a 2.6-percent decline from the previous month in the subgroup index for canned fishery products. Canned salmon prices this February were down 7.4 percent from a month earlier and were lower than February 1963 by 12.1 percent. From January to February prices were higher for canned Maine sardines (up 1.4 percent) as stocks declined, and canned California jack mackerel (up 6.6 percent). Compared with February 1963, the subgroup index this February was down 5.6 percent because of lower prices for nearly all canned fish items.

NEW SALMON HATCHERY TECHNIQUES

In their constant search for ways and means of increasing salmon production, biologists of the Fisheries Research Board of Canada in British Columbia are developing a new hatchery technique. They let the fish release themselves instead of releasing them in bulk when they are thought to be at the right stage for migration.

The Board's Biological Station at Nanaimo, B. C., has described experiments to test new techniques for rearing and release of pink salmon fry in hatcheries at Kleanza Creek on the Skeena River. The small fish have a tendency to hide themselves in daylight and move downstream at night, and the experiments have shown that when reared in darkness at temperatures close to those in nature, fry will release themselves from overflowing troughs at about the same time and stage of development as those at which they would emerge from gravel. Thus normal behavior patterns are not disturbed, and with higher survival of fry, the future runs of salmon may be increased.

The swimming speeds of adult salmon were the subject of another experiment by the Nanaimo station. Knowledge of what speeds the salmon can sustain is essential in the construction of fishways, and it was found that an adult sockeye can keep up a speed of two and one-half feet per second for 100 hours, but suffers fatigue at three feet per second. In one instance two salmon were still swimming after covering the equivalent of 175 miles in three and a half days. (Trade News, Canadian Department of Fisheries, February 1961.)

International

COMMISSION FOR TECHNICAL COOPERATION IN AFRICA

SPECIALIST MEETING ON CRUSTACEANS HELD IN ZANZIBAR:

A Specialist Meeting on Crustaceans was scheduled for April 19-26, 1964, in Zanzibar by the Commission for Technical Cooperation in Africa (CCTA). The Scientific Council for Africa, recognizing the importance of the fishing industry in the developing countries of Africa, decided at a previous meeting, and confirmed at its 13th meeting held in September 1962, to devote one of its Specialist Meetings in 1964 to crustaceans.

Specialists have been invited to attend from Ethiopia, Senegal, Sudan, Zanzibar, Great Britain, and France. The U. S. Agency for International Development (AID) has been invited to send observers to the meeting.

Topics for discussion on the agenda of the Specialist Meeting on Crustaceans include: (1) The ecological position of crustaceans (including parasitism) and their role in the nutritional chain; (2) crabs and sundry crustaceans; (3) Atlantic shrimp--penaeides and other prawns; (4) Indian Ocean and Red Sea shrimp; (5) Crayfish--"jasus" (Cape crayfish) and other crayfish. (United States Embassy, Lagos, February 9, 1964.)

EUROPEAN ECONOMIC COMMUNITY

TARIFF QUOTAS ON SOME FISHERY PRODUCTS GRANTED TO CERTAIN MEMBER STATES:

Certain fishery products are included in additional tariff quotas for 1964 granted by the European Economic Community (EEC) to individual Member States. A tariff quota allows the EEC country named to import the specified quantities at reduced tariff rates.

The products granted tariff quotas include some agricultural items, chemicals, cork and cork products, as well as certain types of fish. Many of those commodities were also subject to tariff quotas during 1963. Except for the chemicals, cork, and some fish, which are exempt from customs duties, the quotas provide for some in-quota duty to be paid. This is consistent with the EEC Commission's philosophy that the national quota is a temporary device, and some duty must be levied in order to reflect the progress of the community as a whole toward the final and integral application of the Common External Tariff.

Fishery items granted tariff quotas to beneficiary Member States and in-quota duty rates for the year 1964 are:

Italy: Tuna for the canning industry, 25,000 metric tons--duty free; Cod, 34,000 tons--duty free; Cod fillets, 2,000 tons--3 percent.

The following tariff quotas are for 1964 and the first three months of 1965.

German Federal Republic: Dogfish, fresh, 3,000 tons--3 percent; Saithe, salted, 2,000 tons--7 percent.

Belgium-Luxembourg: Crab and shrimp, 250 tons--3 percent.

The EEC decided on the above exemptions in December 1963. The authority in granting such tariff quotas is contained in Article 25 of the Rome Treaty. (International Commerce, February 3, 1964.)

EUROPEAN FREE TRADE ASSOCIATION

TARIFF REDUCTION ON CERTAIN FISHERY PRODUCTS:

At their meeting in May 1963, The European Free Trade Association (EFTA) Ministers decided on an accelerated timetable for tariff reduction on industrial goods traded between the 7 member countries of the Associa-

International (Contd.):

tion (Austria, Denmark, Norway, Portugal, Sweden, Switzerland, and the United Kingdom), and between them and Finland (as associate member of EFTA). Under the accelerated timetable, the tariffs on industrial goods were reduced on December 31, 1963, to 40 percent of base rates. Fishery and agricultural products had not been included in the industrial goods category. However, as a result of reclassification, the tariffs on whale meat and a number of agricultural products were also reduced on December 31, 1963, to 40 percent of base rates.

In addition, on December 31, 1963, the United Kingdom (but not other EFTA countries) reduced or eliminated import duties on certain fishery products from EFTA countries. The tariff cuts affected whale meat and certain fishery products (except chilled or frozen fish fillets) which had already been subjected to reduced EFTA rates of duty. Reduction was made in accordance with the following schedule:

(a) Tariffs on the following products (previously reduced for EFTA to less than 5 percent ad valorem) were eliminated on December 31, 1963: fish roe (other than caviar or caviar substitutes) prepared or preserved, canned salmon, and canned prawns and canned shrimp.

(b) Tariffs on the following products (previously standing for EFTA at 5 percent ad valorem or more) were reduced by one-half on December 31, 1963, and will be eliminated on December 31, 1964: peeled shrimp (chilled or frozen); fish waste; salted fish roe; cod-liver oil; fats and oils of fish and marine mammals, whether or not refined; oils wholly obtained from fish or marine mammals; fatty acids, acid oils (from refining), fatty alcohols, wholly obtained from fish or marine mammals; fats and oils wholly obtained from fish or marine mammals; spermaceti, crude, etc; prepared or preserved fish--other than the products covered by (a) above; prepared or preserved crustaceans and molluscs--other than the products covered by (a) above; flours and meals of meat, offals, fish, crustaceans or molluscs, unfit for human consumption; and fish solubles.

(c) The tariff on whale meat for EFTA was reduced to $2\frac{1}{2}$ percent ad valorem on December 31, 1963, and will be eliminated on December 31, 1964. (Board of Trade Journal, December 20, 1963.)

Note: See Commercial Fisheries Review, October 1963 p. 39.

FISHING LIMITS

SCANDINAVIAN COUNTRIES OPPOSE FISHING LIMITS PROPOSAL AT EUROPEAN FISHERIES CONFERENCE IN LONDON:

At the European Fisheries Conference held in London in January 1964, Norway and Iceland refused to participate in the meetings of the Special Committee on Fishery Boundaries. This Special Committee was commissioned on January 13 to draw up a proposal for an agreement based on the joint United Kingdom-Common Market proposal for 6-mile fishery boundaries with permanent fishing rights between 6 and 12 miles off the coasts for fishing vessels from nations which have traditionally fished in those waters.

Norway's decision to place itself outside the London Fishery Conference was motivated by the assumption that Norwegian participation in the fishery boundary committee could be interpreted as an approval in principle of the proposal placed before the committee. The Norwegian delegation is bound by the Storting (Parliament) decision to the effect that a 12-mile fishery boundary will be established in 1970 after the completion of the current transition period, during which fishing vessels from certain countries are allowed to fish in the areas between 6 and 12 miles off the coast.

The proceedings of the Conference have attracted much attention in Iceland. Interest is particularly focused on the fishing limits question and the opposition of the Scandinavian countries to the "six plus six" formula proposed by the European Economic Community (EEC) countries and Great Britain.

Iceland's Foreign Minister told the press that Iceland had clearly indicated that it would not discuss any alteration of its 12-mile limit and that the agreements reached by the Conference will not have any effect on that limit. He added that Iceland will study the results of the Conference and then make a decision on further participation when the Conference reconvened on February 26.

Permission, which the British received under the terms of the 1961 Icelandic-British

International (Contd.):

fisheries agreement, to fish over a period of three years in certain specified areas between the 12- and 6-mile limits for a restricted time each year expired in March 1964. The Icelandic Government has categorically affirmed that this permission will not be renewed, and the British, for their part, have indicated that they would not request a renewal. (United States Embassy, Oslo, January 22, and Reykjavik, January 21, 1964.)

FISH MEAL

PRODUCTION AND EXPORTS FOR SELECTED COUNTRIES, JANUARY-NOVEMBER 1963:

Member countries of the Fish Meal Exporters' Organization (FEO) account for about 90 percent of world exports of fish meal. The FEO countries are Angola, Iceland, Norway, Peru, and South Africa/South-West Africa. Exports of fish meal by FEO countries during January-November 1963 were up 11.3 percent and their production was up 5.4 percent in quantity from that in the same period of the previous year.

Table 1 - Exports of Fish Meal by Member Countries of the FEO, January-November 1963

Country	Nov.		Jan.-Nov.	
	1963	1962	1963	1962
	...(1,000 Metric Tons)...			
Angola	1.8	3.4	23.1	28.7
Iceland	14.7	4.4	81.5	63.4
Norway	15.9	10.2	84.5	51.3
Peru	90.5	94.5	1,054.7	958.3
So. Africa (incl. S.W. Africa)	18.3	9.7	185.0	181.7
Total	141.2	122.2	1,428.8	1,283.4

Table 2 - Production of Fish Meal by Member Countries of the FEO, January-November 1963

Country	Nov.		Jan.-Nov.	
	1963	1962	1963	1962
	...(1,000 Metric Tons)...			
Angola	3.0	4.4	24.0	29.1
Iceland	0.8	1.2	79.1	94.1
Norway	12.1	9.1	122.1	116.2
Peru	116.1	145.6	1,019.5	964.8
So. Africa (incl. S.W. Africa)	3.8	0.8	237.0	201.3
Total	135.8	161.1	1,481.7	1,405.5

During the first 11 months of 1963, Peru accounted for 73.8 percent of total fish meal exports by FEO countries, followed by South Africa with 13.0 percent, Norway with 5.9 percent, Iceland with 5.7 percent, and Angola with 1.6 percent. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, January 29, 1964.)

FOOD AND AGRICULTURE ORGANIZATION

ADVISORY COMMITTEE ON MARINE RESOURCES RESEARCH MEETS IN ROME:

The second meeting of the Advisory Committee on Marine Resources Research of the Food and Agriculture Organization (FAO) was held in Rome, February 6-12, 1964. The committee was to review the FAO Fisheries Division's present work in marine resources research and was to propose guidelines for the future programs.

This year's Advisory Committee session was preceded by meetings of working groups on general plans for a proposed world ocean study and on the use for fisheries purposes of data coming from automatic oceanographic buoys. A meeting was also planned of members of a working group on the marine aspects of the International Biological Program now being organized by the International Council of Scientific Unions.

The Advisory Committee, established in October 1962, meets once a year and reports its findings to B. R. Sen, FAO's Director-General. The Committee is made up of 15 fisheries scientists from 11 nations, who are selected on the basis of their expert knowledge and not as representatives of governments. In addition to its FAO role, the Committee acts as the advisory group on oceanographic aspects of fisheries to the Intergovernmental Oceanographic Commission under the United Nations Educational, Scientific and Cultural Organization (UNESCO).

The Committee chairman is Dr. Alfred W. H. Needler, Deputy Minister of Fisheries of Canada. Dr. Cyril Lucas, Director of Marine Laboratory, Department of Agriculture and Fisheries for Scotland, is vice-chairman. Director Donald L. McKernan, Bureau of Commercial Fisheries, U. S. Department of the Interior, is a member of the Advisory Committee.

* * * * *

WORLD OCEANS CAN YIELD MORE FOOD:

The world's ocean resources are capable of providing man with far more high-quality protein food than they do now, according to the Advisory Committee on Marine Resources Research of the Food and Agriculture Organization (FAO), which met in Rome during February.

International (Contd.):

To realize such an increased harvest, however, says the committee's final report, there is an urgent need for better knowledge of the resources themselves and how they can best be exploited. The report points out that the growth of modern commercial fishing is one of the major problems facing an increased and more logical harvesting of the seas: "While full rational exploitation of the fish stocks requires increases in fishing effort in many areas, there is a great danger that the rapid growth and greater mobility of fleets will lead to overfishing of some stocks before research has revealed the limits of their productive capacity."

Man's growing ability to predict changes in oceanographic conditions in present or potential fishing areas was of major significance. But further progress in that work depends on marine research being planned on a worldwide basis, the Committee said. The world's fisheries are the common property of mankind, the Committee added, and can only be rationally exploited if there is developed well-coordinated international research on marine resources. "In this explosive situation FAO has a major responsibility and a most important part to play," says the Committee report.

The Advisory Committee recommended that FAO's program in marine resources research be given the following priorities: (1) appraisal of the living resources of the sea, including estimation of their productive capacities; (2) discovering the scientific knowledge necessary for regulating international fishing effort so as to obtain the greatest long-term value to mankind; and (3) research toward improving the resources themselves. (Food and Agriculture Organization, Rome, February 13, 1964.)

* * * * *

PLANS FOR EXPLORATION OF MARINE RESOURCES URGED BY DIRECTOR-GENERAL:

Exploration of the sea and its resources "should, and eventually must be planned, if the sea is to provide the greatly increased supplies of animal protein that the world's human population needs," said the Director-General of the Food and Agriculture Organization (FAO) at the opening session of FAO's Advisory Committee on Marine Resources Research meeting held in Rome. In his speech he said that the world was now facing a fisheries revolution which should soon make it possible to farm the seas.

There were, however, three prerequisites for this, the FAO Chief continued. The first, he said, was "a detailed and quantitative knowledge of the dynamic biological processes in the sea and the pathways by which the sun's energy and the nutrients in the sea water become converted into materials of use to man." The second was "a real conquest of the sea, in the sense of a great development and application of techniques and equipment for exploiting and controlling the sea." The final prerequisite, he said, was the need for "international control of exploitation to ensure that the fruits are plucked only when they are ripe, and that seed is set aside for the future." Although still rich in unused or underutilized resources, in many cases present resources could be improved and perhaps new stocks could be created by transplantation, he said.

But in some cases there was urgent need for conservation of stocks now being overfished at the expense of long-term sustained yields. In this connection, the FAO Director-General cited the example of whale stocks in the Antarctic Ocean.

Late in 1963 fisheries scientists of many nations had recommended a drastic reduction in whaling catches to preserve whales from possible extinction. "Yet we are now in the middle of a whaling season during which yet again more whales will be taken than the present stocks can support. Results so far reported from the Antarctic this year are confirming the scientists' gloomy view of the situation," the FAO head stated. He personally has called this situation to the attention of the member countries of the International Whaling Commission.

FAO's biennial Conference, which was held in Rome November 16-December 5, 1963, called for a reappraisal of the program of the Organization's Fisheries Division, with particular reference to its work in marine resources. "This reappraisal could lead to new measures which could make this Organization in future years the leading intergovernmental body in encouraging rational harvesting of food from the oceans," the Director-General said. He concluded his address at the opening session of the Advisory Committee meeting by calling on the Committee to assist FAO in carrying out that task.

The FAO Advisory Committee on Marine Resources Research is made up of 15 outstanding fisheries scientists from 11 countries, appointed for one-year terms by the Director-General. The Committee also acts as the advisory group on oceanographic aspects of fisheries to the Inter-Governmental Oceanographic Commission under the United Nations Education, Scientific and Cultural Organization. (Food and Agriculture Organization, Rome, February 6, 1964.)

* * * * *

WORLD FISH RESOURCES MUST BE MORE WISELY MANAGED:

The lack of wise management of the world's fisheries resources seriously restricts man's ability to reap a maximum harvest from the sea, warned Dr. D. B. Finn, former Director of the Fisheries Division of the Food and Agriculture Organization (FAO). He blamed this situation on the intense competitiveness of private fisheries enterprises and the inability of governments to agree on a common code of discipline in exploiting the oceans.

Dr. Finn, who retired from his FAO post on January 31, 1964, after 18 years as head of that Division, was asked to speak in his personal capacity at the FAO Advisory Committee on Marine Resources Research meeting held in Rome in February 1964. "The failure of the International Whaling Convention, particularly as it affected the survival of the blue whale, is one example," he said. "The result is that the blue whale is now economically extinct. It seems to me that the world is now on its way to this state of affairs at a rapidly increasing pace," he continued.

International (Contd.):

At the International Whaling Convention meeting held in 1963, member nations were unable to agree upon restricting whaling catches in order to preserve whales from possible extinction. The pressures put upon governments by industrial fishing combines were alleged to be the usual cause of such failures. Dr. Finn said, "This is because industrial combines in any one country result in more effective political pressure in gaining government concessions. Numerous small individual enterprises in the same country cannot effectively exert this kind of pressure. Private enterprise in fishing tends to become more oligopolistic, if not outright monopolistic. Although this may increase efficiency and make possible a better use of capital, it does nothing to relieve the competition between countries for the spoils of the chase. In fact, it may make it worse. Nor does increased efficiency in catching per se do anything to produce wiser cropping or to achieve the maximum yield. Under such regimes, the yield of the sea may be far below its potential production. Eventually only the most efficient private expeditions will be able to make fishing pay. This is not necessarily true for state-operated expeditions which may be able to disregard costs as a matter of government policy."

Another problem, Dr. Finn continued, was the sheer number of organizations engaged in fisheries research. "Look at the many international groups now working at this task. . . . With such multiplicity, one can imagine what a tremendous task it would be to achieve a 'smooth co-ordination of effort."

Dr. Finn said FAO's Fisheries Division, despite its qualified and efficient personnel, was not equipped to carry out all the work the world expects of it. He said that man now has the scientific know-how to truly farm the sea and that world fishing faced a renaissance such as occurred during the agricultural revolution 100 years ago. Reduced to its simplest terms, world fishing has two elements--the nature of fishing itself, and the living resource and its response to man's exploitation. Describing the first, he said, "modern fishing is a fiercely competitive hunt. The hunters, and their skills, increase daily." On the second point, he said there was an urgent need for more knowledge of just what the seas' resources are and their likely response to different intensities of fishing. "Until we can say more about this, it is very unlikely that the arguments for wise exploitation will be very convincing. It is here that the challenge lies for the fisheries scientists; it is here where the greatest urgency prevails." (Food and Agriculture Organization, Rome, February 7, 1964.)

* * * * *

FISHERIES DIVISION DIRECTOR RETIRES:

The Director, Dr. D. B. Finn, of the Fisheries Division of the Food and Agriculture Organization (FAO), retired from that organization of January 31, 1964, after 18 years of service. When appointed to FAO, Dr. Finn was Canada's Deputy Minister of Fisheries, a post he had held since 1940.

The Deputy Director-General of FAO, speaking in the absence of the Organization's head, said that Dr. Finn in his capacity of FAO's Fisheries Director "has become known all over the world, and his leadership has gained him an international reputation." Dr. Finn, he said, had built the Fisheries Division from its inception to its present strength, "not only the Division at headquarters, but also the Fisheries Regional establishments, the Fisheries Councils in the different regions, and a wide range of technical assistance and Special Fund activities... ." He had initiated the many publications on fisheries which had gained world-wide recognition and "his name will always remain a part of the history of FAO," he said.

* * * * *

NEW DIRECTOR OF FISHERIES DIVISION APPOINTED:

Roy I. Jackson of the United States has been appointed Director of the Fisheries Division of the Food and Agriculture Organization (FAO), to succeed Dr. D. B. Finn of Canada, who retired in January 1964 after 18 years as FAO Director of Fisheries. The appointment will be effective on May 1, 1964.

Jackson is a resident of New Westminster, British Columbia, Canada, where he has, since 1955, been Executive Director of the International North Pacific Fisheries Commission at Vancouver. Prior to that he was a biologist and engineer with and later Assistant Director of the International Pacific Salmon Fisheries Commission at New Westminster.

He attended the University of Washington and received his bachelor of science degree in 1939 after specializing in fisheries biology and engineering. After graduate study and work as a fisheries biologist and fisheries engineer, he took the degree of Bachelor of Applied Science in Civil Engineering at the University of British Columbia, Vancouver, in 1948. Jackson is a Fellow of the American Institute of Fishery Research Biologists and a former member of the Association of Professional Engineers of British Columbia. (Food and Agriculture Organization, Rome, February 26, 1964.)

* * * * *

EXPERTS SEEK WORLDWIDE STANDARDS FOR FISHERY PRODUCTS IN INTERNATIONAL TRADE:

Experts from 12 countries met in Rome February 18-20, 1964, to begin work on worldwide standards and a code of principles for fishery products in international trade. The meeting was concerned primarily with tuna canned in oil, sardines canned in oil, herring canned in tomato sauce, and frozen tuna. The work is part of that being carried out under

International (Contd.):

the Codex Alimentarius Commission established in 1962 by the Food and Agriculture Organization and the World Health Organization of the United Nations.

In 1957, fishery exports absorbed 1 out of every 4 tons of fish landed. In 1961, that ratio of fish or fish products going into international trade had grown to 1 out of 3 tons landed.

Each major fishing country already has established food laws, regulations, and quality standards for its products. The job now facing world fisheries experts is to prepare a commonly-accepted international instrument. (Food and Agriculture Organization, Rome, February 11, 1964.)

GREAT LAKES FISHERY COMMISSION

LAKE TROUT FISHING TRENDS IN LAKE SUPERIOR:

Improvements shown over the past two years in the inshore population of lake trout in Lake Superior have aroused the optimism of sport and commercial fishermen in the Great Lakes. This optimism is well founded, but it needs to be tempered with the realization that recovery of those highly-valued fish has only begun.

The lake trout population has responded sharply to the reduction of sea lamprey by increases in the average size and numbers of fish. Improvements in the abundance of larger and older fish already have led to increased spawning in certain areas, but it will be several years before a good stock of spawners is reestablished.

The Canadian lake trout fishery in Lake Superior has been so reduced that it has been difficult to assess the status of lake trout stocks. The recovery of the stocks has now made it possible for the scientists to more accurately measure the changes that are occurring in the lake trout population. Nevertheless, protection must still be given to native as well as planted trout to speed recovery of spawning stocks.

Therefore, fishery agencies in both the United States and Canada have agreed to limit the lake trout catch in their areas to the amount required for biological assessment. The true goal of the lake trout rehabilitation program would be jeopardized if wide-scale fishing was authorized prematurely. (Source: Great Lakes Fishery Commission, February 12, 1964.)

INTERNATIONAL FEDERATION FOR THE PROGRESS OF FOOD

FIRST NUTRITIONAL CONGRESS TO BE HELD IN PARIS:

The First Congress of the International Federation for the Progress of Food (FIPAL) will be held in Paris, France, November 6-9, 1964. The Congress will be held under the sponsorship of several of France's Ministries--the Ministry of Agriculture, the Ministry for National Education, and France's Secretary of State for Information. It's theme will be "Nutritional Habits and Consumption Patterns." The FIPAL Congress will be held at the same time as the International Food Exhibition (Salon International de L'Alimentation.) Among the French firms which have applied for space are those producing frozen and canned food products. Also, applications to participate have been received from firms in the United States, German Federal Republic, Denmark, and Morocco.

Note: For details write to: SOPEXA, 121 Boulevard Haussmann, Paris 8e, France.

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

REGULATIONS FOR 1964 SOCKEYE SALMON FISHERY IN NORTH PACIFIC:

The tentative suggestions for regulatory control of the 1964 sockeye fishery in North Pacific Convention waters, as submitted to the fishing industry on December 18, 1963, were reconsidered in view of suggestions made by the Advisory Committee at a meeting of the Commission held on January 16, 1964.

Action taken by the Commission in view of the Committee's recommendations is as follows:

1. Representation by both United States and Canadian members of the Committee in respect to additional fishing time for chinook or spring salmon nets was considered but not acted upon at this time. It was agreed that any representation made at a later date on the

International (Contd.):

part of the national regulatory fisheries agencies regarding the need for the proper harvesting of this species, consistent with the required conservation of the sockeye salmon, would be considered favorably as provided for in Article V of the Sockeye Salmon Fisheries Convention.

2. The date for relinquishing control in a major portion of United States Convention waters lying easterly of the Angeles Point-William Head line was changed from September 20 to August 30 on the basis that there would not be sufficient gear to endanger the proper escapement of the late running races of sockeye through these waters.

3. In view of the earlier date set for relinquishing control in a major portion of United States Convention waters lying easterly of the Angeles Point-William Head line, those remaining waters lying westerly of a line projected from Iwersen's dock on Point Roberts towards Georgian light at Active Pass to the International boundary were closed from August 30 to September 20 to avoid the possibility of catching delaying sockeye drifting off the mouth of the Fraser River.

Canadian Convention Waters:

West of William Head-Angeles Point Line and East of Bonilla-Tatoosh Line:

June 28 to August 15 - Closed to all net fishing.

August 16 - Relinquish control.

East of William Head-Angeles Point Line Including Areas 17, 18, that portion of Area 19 lying easterly of the referenced line and District No. 1:

June 28 to July 11 - Closed to all net fishing except that the Area Director may authorize the use of gill nets having a mesh of not less than 8 inches extension measure for linen nets and 8½ inches extension measure for synthetic fibre nets at such times and places that he may deem appropriate.

July 12 to September 26 - Open to net fishing 8:00 a.m. Monday to 8:00 a.m. Tuesday of each week.

September 27 - Relinquish control.

Special Troll Restrictions:

Commercial fishing by trolling shall be prohibited during the period from August 23 to September 26, except at such times that net fishing, other than with spring salmon nets, may be permitted, in any of Canadian Convention waters (Howe Sound not included) lying easterly and inside of a line projected from Gower Point at the northerly entrance to Howe Sound to Thrasher Rock light thence in a southeasterly direction to Salamanca Point on the southerly end of Galiano Island thence in a straight line to East Point on Saturna Island, thence in a straight line towards Point Roberts light to the intersection with the international boundary line thence following the international boundary line to its intersection with the mainland.

United States Convention Waters:

West of William Head-Angeles Point Line and East of Bonilla-Tatoosh Line:

June 28 to August 15 - Closed to all net fishing.

August 16 - Relinquish control.

East of William Head-Angeles Point Line:

June 28 to July 11 - Closed to all net fishing except with nets having a mesh of not less than 8½ inches extension measure and under regulation by the Washington State Director of Fisheries.

July 12 to August 8 -
- Gill nets open daily 7:00 p.m. to 9:00 a.m. Monday afternoon to Wednesday morning of each week.
- Purse seines and reef nets open daily 5:00 a.m. to 9:00 p.m. Monday and Tuesday of each week.

August 9 to August 29 -
- Gill nets open daily 7:00 p.m. to 9:00 a.m. Sunday afternoon to Tuesday morning of each week.
- Purse seines and reef nets open daily 5:00 a.m. to 9:00 p.m. Monday and Tuesday of each week.

August 30 - Relinquish control except in those waters lying westerly of a line projected from Iwersen's dock on Point Roberts towards Georgina light at Active Pass to the intersection with the international boundary, said waters to remain closed until September 20.

September 20 - Relinquish control in the West Point Roberts area as defined above.

Notes: (1) Times are based on Pacific Daylight Saving Time.
(2) See Commercial Fisheries Review, December 1963 p. 51.

INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC

PROPOSED PLANS FOR EQUALANT III:

At least 5 nations and 6 vessels will participate in EQUALANT III. A general plan involving a 15-day synoptic period of direct current measurements in an area to the east of 20° west longitude (Canary Islands) and south to 20° south latitude was developed at the July 1963 meeting in Paris of the International Coordination Group (ICG) for the International Cooperative Investigations of the Tropical Atlantic (ICITA). Schedules and general plans for EQUALANT III were approved by the Intergovernmental Oceanographic Commission (IOC) at meetings in Paris during October 1963.

Definite commitments for vessel participation were received from the Congo (Brazzaville), Ghana, Republic of Ivory Coast, Spain, and the United States. The United States vessels involved are the Pillsbury operated by the University of Miami and the Geronimo operated by the U. S. Bureau of Commercial Fisheries. Tentative commitments were received from the Soviet Union. A scientist from the Institut fur Meerskunde Universitat

International (Contd.):

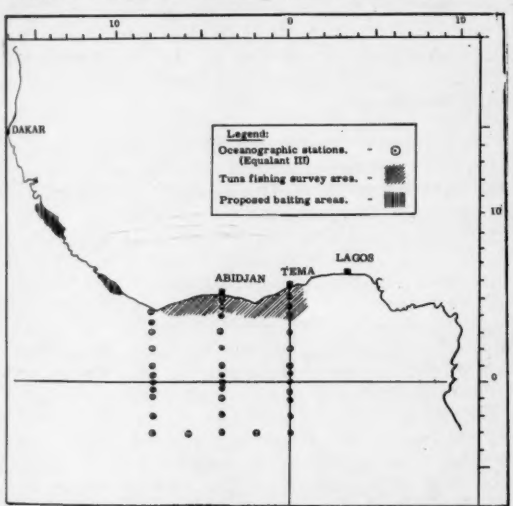
Kiel will participate on board the Geronimo during the survey.

Note: See Commercial Fisheries Review, December 1963 p. 50.

* * * * *

BUREAU OF COMMERCIAL FISHERIES RESEARCH VESSEL PARTICIPATES IN EQUALANT III:

M/V "Geronimo" Cruise 3 - EQUALANT III (January 15-May 15, 1964): The research vessel Geronimo operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Washington, D. C., is participating in EQUALANT III of the International Cooperative Investigations of the Tropical Atlantic (ICITA) and will be conducting some additional studies during this four-months'



Proposed cruise track of M/V Geronimo Cruise 3 in Gulf of Guinea, January 15-May 15, 1964.

cruise in the Gulf of Guinea. The objectives of the cruise are: (1) participation in EQUALANT III, through a program of direct current measurements associated with hydrographic and biological sampling in the Gulf of Guinea, and (2) surveys of the distribution of schools of tuna in surface waters of the Gulf of Guinea and of related environmental factors.

On the Washington, D. C., to Dakar (January 15-February 3) part of the cruise, various oceanographic, hydrographic, biological, and weather observations are to be made; a record is to be kept on the occurrence of fish schools, birds, and mammals observed at the sea surface; and night-light stations are to be occupied.

On the Dakar to Lagos (February 5-March 2) part of the trip, tuna survey I is to be conducted. The vessel is to proceed from Dakar to the Continental Shelf area off the coast of Sierra Leone (from latitude 9° N. to latitude 8° N.) and search for Sardinella (a sardine) to be used as live bait in tuna fishing. If these bait fish are not found in that locality, the vessel is to move south to the continental shelf area off Liberia and continue the search. Tuna surveys, with observations on surface schools and with live-bait fishing, are to be made during daylight hours each day. The search is to follow an "in-out" pattern with lines extending south from the 100-fathom curve for a distance of about 90 miles along the following longitudes: 7°30' W., 6°30' W., 5°30' W., 4°30' W., 3°30' W., 2°30' W., 1°30' W., 0°30' W., 0°30' E., 1°30' E., 2°30' E., 3°30' E.

Samples of tuna from a maximum number of schools are desired. Pole-and-line fishing is to be attempted on each school encountered. Jigs are to be trolled continuously during the tuna surveys. If the fish bite, fishing is to be broken off after 25 fish of each species in the school are aboard. If the fish do not come up to the vessel and start biting after 2 passes, chumming is to be broken off and the survey resumed. It is not known at what point in the survey that the initial supply of live bait may become exhausted. In the event that this does occur, an attempt is to be made to replenish the supply of bait, after which the survey will be resumed.

Upon successful sampling of tuna schools, a record is to be made of the fork length, sex, and weight of each fish; 10 ovaries from among the 25 fish caught from each school sampled are to be preserved; and stomach samples from each of the 25 fish caught from each school are also to be preserved.

Supplementary observations during the tuna surveys include oceanographic, hydrographic, and weather observations; night-light collecting as opportunity affords; and mid-water trawl samples in areas of concentration of tunas.

On the trip from Lagos to Tema (March 4-28), 37 stations will be occupied (fig.) At each

International (Contd.):

station oceanographic, hydrographic, and biological observations are to be made; a midwater trawl haul is to be made in the mixed layer; and a high speed net haul made at the surface.

From Tema to Abidjan (March 30-April 22), tuna survey II is to be a repeat of tuna survey I.

From Abidjan to Washington (April 24-May 15), the same observations are to be made as those during the trip from Washington to Dakar.

Note: See Commercial Fisheries Review, June 1963 p. 56.

NORTH PACIFIC FUR SEAL COMMISSION

CONVENES IN MOSCOW FOR ANNUAL MEETING:

The annual meeting of the North Pacific Fur Seal Commission convened in Moscow on February 24, 1964, with the four governments which are Parties to the Interim Convention on Conservation of North Pacific Fur Seals participating. The United States delegation was composed of representatives from the U. S. Department of the Interior, the Department of State, and the State of Alaska. Other delegations were from Canada, Japan, and the Soviet Union.

When those four countries first agreed to conserve the fur seal in 1911, the seal was well on the way to virtual extinction. Since then the seal herd on the Pribilof Islands, off Alaska, has grown from a low of 134,000 to about 1.5 million animals. Because the fur seal is migratory, living both on land and ranging far at sea, special problems in conservation occur. The Fur Seal Treaty of 1911 prohibited harvesting the animal at sea and provided for the sharing of the land-based harvest with those sealing on the open sea.

Japan withdrew from the first treaty in 1941. From 1942 to 1957, the Pribilof seal herd was protected by a provisional agreement between Canada and the United States. A new North Pacific Fur Seal Convention was concluded in 1957 by the original four countries. Under that Convention, Japan and Canada each receive 15 percent of the annual separate harvests of the United States and the U.S.S.R., and carry out extensive research under plans approved yearly by the Fur Seal Commission.

One of the research problems now being considered by the Commission is whether harvesting at sea in conjunction with land sealing could be permitted in certain circumstances without jeopardizing maximum sustained harvests. Much has been learned in recent years about migration, mortality, reproduction, feeding, diseases, and many other factors affecting the seal herds.

A significant feature of fur-seal behavior is that the bull seals or "harem masters" and the cow seals arrive on the islands at different times. The bachelor seals--those under 6 or 7 years of age--arrive even later, and live apart from the harems. This fact has long been used to advantage in land harvesting. Other research concerns the role of the seal as predators of other sea creatures. Studies are being made of what seals eat, and how, and how far they can range from the breeding grounds to find food. The research programs are worked out so that the research of one country supplements that done by the other countries.

Fur seals of the Pribilof Islands are managed and harvested by the Bureau of Commercial Fisheries, U. S. Department of the Interior. Biologists study the seals to learn their characteristics and life habits, and from 50,000 to 60,000 processed seal pelts are sold each year for the account of the United States Government. The fur seal is very different from other types of seals and apart from its intrinsic value as a unique species, it is also valuable as an economic resource. The seals harvested by the United States Government on the Pribilof Islands have brought more than $25 million to the Federal Treasury. The fur is among one of the most valuable in the world.

Note: See Commercial Fisheries Review, December 1963 p. 52, January 1963 p. 74.

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

FISHERIES COMMITTEE MEETING HELD:

The Fisheries Committee of the Organization for Economic Cooperation and Development (OECD) met on February 10-12, 1964. The Committee considered subsidies and other financial support given to fishing industries in member countries. It also considered a report on price systems in the fishing industries of Norway and Germany, and a report on the general services rendered to the fishing industry by the Government in Germany. (OECD Activities, February 1, 1964.)

International (Contd.):

WHALING

OUTLOOK FOR 1963/64 ANTARCTIC SEASON:

The 1963/64 International Antarctic whaling season opened on December 12, 1963, with factoryships and fleets of catcher vessels from Japan, the Soviet Union, Norway, and the Netherlands participating. The whale hunting season ends April 7, 1964, and predictions were that by that time fewer whales will have been caught than in the previous season. The 1962/63 season's catch was below the previous season's partly because there were fewer expeditions. Also, for the first time in many years, no whaling was done from Antarctic land stations at South Georgia. But aside from that, scientific findings point to a continued serious decline in the Antarctic population of several species, particularly the finwhale and the blue and humpback species.

The Fifteenth Annual Meeting of the International Whaling Commission (IWC) held in London, in July 1963, was opened on a serious note by the Parliamentary Under Secretary of State for Scotland. In whaling, as in wars, he said, it was easier to invent efficient means of destruction than to exercise self-discipline and devise the necessary international agreements to keep such power in control. The IWC had arranged an independent investigation by a committee of three scientists and he said that committee had produced evidence of a serious whale stock decline. The committee scientists were from the United States and New Zealand and included the Chief of the Biology Branch of the Fisheries Division of the Food and Agriculture Organization of the United Nations (FAO). The three scientists worked with the IWC's Scientific Committee to analyze a large collection of biological data plus whale catch statistics for the past 30 years.

The most recent catch figures showed that 21 Antarctic expeditions during the 1961/62 season caught 15,252 "blue-whale units" compared with only 11,300 units caught by 17 expeditions in the 1962/63 season. In those last two seasons, the Antarctic blue-whale catch dropped from 1,118 to 947 units, the humpback catch from 309 to 270, and the finwhale catch from 26,438 to 18,668. Meanwhile, the 1962/63 figures showed an increase over the previous season in the catches of sperm whales and of the more plentiful but much smaller sei whale.

The total Antarctic production of baleen and sperm oil dropped from 2,001,961 barrels in the 1961/62 season to 1,524,150 barrels in 1962/63. As a comparison, regions outside the Antarctic yielded more whales and oil in 1962/63 than in the previous season.

At the meeting, the Committee of Three Scientists recommended the complete cessation of the catching of blue and humpback whales in the Antarctic for "a considerable number of years." The scientists said that to maintain the present sustainable yield of finwhales, the annual catch would have to be cut to 5,000 whales. The catch would have to be much lower even than that for a number of years if the finwhale stock was to be allowed to increase in numbers to the extent that it would eventually yield a maximum sustainable catch of about 20,000 whales annually. The scientists also predicted that in 1963/64 the same 17 expeditions which participated last season would only be able to catch about 16,000 finwhales (9,000 blue-whale units, including sei and pygmy blues), and in doing so they would reduce the stock drastically.

The 16 contracting countries of the Commission voted for complete protection of humpback whales south of the equator. These countries also instituted complete protection for the blue whale except in an area mainly inhabited by a smaller race called the pygmy blue. In addition, an agreement between the 5 (now 4 because the United Kingdom dropped out) Antarctic pelagic whaling countries about catch inspection was brought to a near-final stage.

But the Commission members disagreed widely on the question of reducing the total catch limit. The limit for some years had been 15,000 blue-whale units. (One blue-whale unit equals 2 finwhales, $2\frac{1}{2}$ humpbacks, or 6 sei whales). Finally, the decision was taken to reduce the quota to 10,000 units. Most of that quota would be finwhales. To reach the quota, about 16,000 finwhales would have to be caught.

In September 1963, the decision brought a reaction from the Director-General of the Food and Agriculture Organization. In a letter from FAO's Rome headquarters to the Commission Secretary, he complimented the

International (Contd.):

Commission on its new protection regulation for humpback and blue whales. But he called the quota reduction "completely ineffective as a conservation measure" for finwhales. His letter continued, "Any serious attempt to reach the new quota will further reduce the stock of finwhales and delay the time when, even by the application of stringent conservation measures, those stocks can be rebuilt to a level at which they can sustain economic yields." The FAO Director-General asked the Commission Secretary to convey an appeal to Commission member countries "to adopt, during the forthcoming Antarctic whaling season, a policy of voluntary restraint in the catching of finwhales so that the total catch of that species should not exceed 5,000 whales." He said that he considered it his duty to take such action because FAO had a basic constitutional responsibility to promote and recommend national and international actions toward conservation. "I am making this appeal," he said, "because of the need for preventing further and perhaps irreparable damage to the whale stocks." As of February 1964 there had been no official recognition of the appeal from the whaling countries. But in November 1963, the FAO governing Conference expressed its grave concern about the problem and endorsed the Director-General's appeal.

The 1963/64 whaling season could well be the most crucial in the history of Antarctic whaling. (Food and Agriculture Organization, Rome, February 21, 1964.)

Note: See Commercial Fisheries Review, March 1964 p. 38, January 1964 p. 41, and August 1963 p. 78.

Australia

TUNA LONG-LINING SURVEY:

It is doubtful if Australian fishermen can undertake offshore tuna long-line fishing on a year-round basis unless there is a substantial change in the present cost/price relationship of the Australian tuna fishery. That conclusion was reached by a three-man investigating team of senior Australian Government officials which visited Japan, Hawaii, and American Samoa in 1963 to examine vessels, gear, and technical developments in the long-line industry. The visit was part of the Government program to develop tuna resources in waters adjacent to Australia, particularly in the Tasman Sea.

The mission's report, released in late 1963, recommends that consideration be given to the development of modified tuna long-line methods suitable for part-time use by Australian fishing vessels. A vessel designed for pole-and-line fishing may not be suitable for full-scale long-lining but there is a possibility of using modified long-line gear, according to the report.

The Australian catch of tuna is about 5,000 short tons a year, consisting almost entirely of southern bluefin tuna caught by the pole-and-line fishing method in two areas--off the southern coast of New South Wales, and off the South Australian coast, near Port Lincoln. Most of the New South Wales tuna catch is taken from October to December whereas most of the South Australian catch is taken from January to April. Some of the larger tuna vessels operate in the fishery in both areas.

The seasonal nature and uncertainties of the present Australian tuna fishery result in unsatisfactory features both for the fishermen and the processors.

The report points out that local processors have had no problem in disposing of tuna supplied by Australian fishermen. Some frozen raw tuna has been exported to the United States, but most of the supply has been canned and sold in Australia. There are good indications that the Australian tuna market can absorb larger quantities.

However, any major development of the Australian tuna industry needs to include untapped deep-sea stocks which require new fishing methods. This situation led to the investigation of long-line gear.

In Japan, an Australian study group surveyed many tuna long-line vessels and selected four for detailed study. The vessels studied ranged in size from 112 to 495 gross tons. Crew accommodations on the vessels did not match average Australian facilities. Deck heads were too low for Australian crews, and the engineroom and machinery spaces appeared to be too cramped to meet Australian regulations.

Estimates were made of the construction costs of such vessels built in Japan, but modi-

Australia (Contd.):

fied to comply with Australian specifications. The estimates did not include the cost of the actual long-line fishing equipment.

Data on the Japanese long-line tuna catch in waters off the east coast of Australia were obtained. The data indicate that the tuna resource in those waters will sustain year-round deep-sea long-lining.

But detailed calculations for operating 4 long-line vessels from east Australian ports by Australian fishermen indicate that at the prevailing Australian ex-vessel price of ŁA50 (US$111) per short ton, annual losses would be considerable.

The ex-vessel price for tuna in Japan is considerably above that in Australia. On the other hand, the Japanese have lower operating costs. The outlook for reducing estimated Australian long-line costs by additional mechanization is not favorable.

The study concluded that Australian fishermen would not be able to operate profitably in the tuna long-line fishery on a year-round basis unless there is some very substantial change in the present cost/price relationship of the Australian tuna fishery. It was suggested that consideration be given towards developing modified long-line gear and methods suitable for part-time use by Australian fishing vessels. (Australian Fisheries Newsletter, December 1963.)

Note: See Commercial Fisheries Review, October 1963 p. 44.

Bulgaria

PLANS FOR FISHING FLEET:

Rabotnichesko Delo on February 14, 1964, published an interview with a Bulgarian Academy of Sciences corresponding-member who discussed Bulgarian high-seas fisheries plans. He said that Bulgaria was less fortunately situated than the Soviet Union and Turkey for Black Sea fishing and had decided to "turn to the unlimited fish stocks of the oceans where everyone fishes who has a fishing fleet." He said that Bulgaria would first try fishing around Iceland, Newfoundland, and the West Coast of Africa. Later, trips to the Indian Ocean were "highly probable." He indicated that Bulgarian efforts to develop an offshore fleet would depend to some extent on Soviet cooperation and assistance. (United States Legation, Sofia, February 19, 1964.)

* * * * *

HIGH-SEAS FISHERIES DEVELOPMENT AIDED BY SOVIETS:

An agreement under which the Soviet Union will help Bulgaria to develop her high-seas fishery was signed in Moscow early this year by the Bulgarian and Soviet Ministers of Foreign Trade, according to a Bulgarian central press announcement on January 25, 1964.

Under the agreement the Soviet Union will turn over to Bulgaria by the end of 1964, one trawler equipped to catch 4,000 to 5,000 metric tons of fish on the high seas each year. By the end of 1970, the Soviet Union is to deliver another 19 such trawlers to Bulgaria, as well as 4 refrigerator vessels. This fleet of vessels is expected to bring the Bulgarian fishery catch up to the target of 100,000 tons annually set in the 20-year plan. The number of persons employed in high-seas fisheries will be about 1,500 to 1,600, which is the number now employed in the river, Black Sea, and pond fisheries of Bulgaria.

Because of the additional capital to be used and the good prospects envisaged, high-seas fisheries production is expected to be ten times greater than that of the Bulgarian river, Black Sea, and pond fisheries. It is expected that the 20 trawlers will remain on the fishing grounds for periods of from 3 to 6 months during which time each vessel will catch 25 to 30 tons of fish a day. The fish will be washed mechanically, frozen, and stored on the trawler. About every two weeks, a refrigerator vessel will take the frozen fish from 4 or 5 trawlers and bring it to port. (United States Legation, Sofia, January 29, 1964.)

Canada

NEW SMOKED FISH REGULATIONS:

In late 1963, the Fish Inspection Regulations of Canada were amended to require that smoked fish in any container sealed to exclude air, such as plastic envelopes or cans, must be heat processed after sealing at the temperature and for the time normally used for sterilizing canned fish products. (The new regulation does not apply to unpackaged smoked fish

Canada (Contd.):

or to smoked fish in a loose wrapper not sealed.)

As a temporary alternative, short-term regulations remaining in effect only until April 30, 1964, provide that smoked fish may be packed in containers sealed to exclude air, such as plastic envelopes or cans, provided that it is frozen immediately after packaging and kept frozen through all stages of distribution from processing through the wholesalers and retailers to the consumers. Frozen, vacuum-packed, smoked fish packed before April 30, 1964, under the temporary provision, must bear on the main panel of the container, prominently displayed and in lettering not less than one-quarter inch high, the words "Keep Frozen."

The new regulations apply equally to all vacuum-packed smoked fish in Canada which has been imported. If the product to be imported has been heat processed, in accordance with the first part of the regulations described above, details of the heat processing must be made available to the Canadian Department of Fisheries before entry of the shipment will be permitted. (Canadian Trade News, November-December 1963.)

* * * * *

BRITISH COLUMBIA SHUCKED OYSTER PRODUCTION, 1963:

British Columbia production of shucked oysters in 1963 was 70 percent above that in 1962.

British Columbia Oyster Meats Production, 1962-1963

Liquid Measure	1/1963	2/1962
8-oz.	427,054	411,235
12-oz.	31,891	
16-oz.	14,763	20,503
20-oz.	6,461	
32-oz.	74,364	75,462
40-oz.	8,319	
128-oz.	112,870	50,061
Total in gallons	170,375	100,343

1/Preliminary.
2/Revised.
Note: A more detailed unit breakdown of British Columbia oyster production became available in 1963.

Prices paid by wholesale distributors in British Columbia for oyster meats in December 1963 were as follows: half-pints, C$0.30-0.35; pints, $0.53-0.75; quarts, $0.90-1.15; and gallons, $3.00-4.50 (bulk oyster meats were available at a slightly lower rate per gallon).

Note: See Commercial Fisheries Review, March 1963 p. 51.

Chile

ANCHOVETA REAPPEAR OFF NORTHERN CHILE:

After an almost complete absence of six months, anchoveta reappeared in the coastal waters of northern Chile on December 6, 1963. Many of the fish-meal plants were caught unprepared, and fish-holding bins were well filled while the reduction factories prepared for processing.

When the fish first reappeared, the landings contained a high percentage of small fish and the protein content of the meal dropped sharply. Landings in December 1963 were about the same as those in the same month of 1962, but the total anchoveta catch in 1963 fell far short of anticipation.

In January 1964, the anchoveta returned to normal size and were taken in greater quantity than in January 1963. All plants were operating on a 24-hour schedule at maximum capacity. Several new fish-meal plants will go into production during the first quarter of 1964. This should restore the balance between fleet and plant capacity in northern Chile.

The Chilean Fisheries Development Institute became operative January 1, 1964. The institution will provide technical information needed for accelerated development and rational exploitation of Chile's fishery resources. (United States Embassy, Santiago, January 23, 1964.)

Communist China

FISHERIES TRENDS:

Communist China was the third largest fishing nation of the world in 1962 with an estimated annual catch of 5 million metric tons, according to the Food and Agriculture Organization (FAO) of the United Nations. The Australian Fisheries Newsletter, December 1963, reported the following description of the fishing industry in Communist China:

Communist China (Contd.):

China is rich in fish resources with an 8,700-mile coastline and numerous good harbors. The main coastal waters--Po Hai Bay, the Yellow Sea, the East China Sea, and the South China Sea--contain more than 1,000 marine species of economic value, including yellow croakers, "hairtails," herring, bream, globefish, eels, sharks, and mackerel. Shrimp are abundant, especially in the Yellow Sea and Po Hai Bay. In addition, clams, oysters, scallops, mussels, squid, and other shellfish are caught in large quantities.

The Government has put considerable effort into developing marine fisheries, which normally account for about 60 percent of the country's annual fish catch.

Some of the leading fishing ports are Lushun (Port Arthur), Chingtao (Tsingtao), Yentai (Chefoo), and Shanghai. Motorized junks are being built, and motors are being installed on sail boats. Some new fishing harbors have been built, some of which have multiple facilities to supply mechanized junks and trawlers, and to process their catch. There are also some refrigerated carrier vessels in use. It has been reported that communes are now responsible for 80 percent of national fish production.

For rapid training, short courses are provided to instruct fishing crews. In some cases, the training is carried out aboard a vessel, the apprentices learning under experienced crew members while helping with the work. In Chekiang Province, a leading fishing area, more than 3,000 fishermen are reported to have been trained since 1956.

Denmark

FISHERIES TRENDS:

February 1964: Fishing Limits: Danish fishery organizations have asked their Government to ratify the convention establishing a 12-mile fisheries limit which was expected to be agreed upon at the West European Fisheries Conference which reconvened in London, February 26, 1964. Qualifications would permit countries with traditional fishing rights to continue to fish up to 6 miles offshore (or possibly 3 miles for a shorter period).

Export Market Promotion: Although exports of Danish fishery products set a new record for both quantity and value in 1963, the industry is concerned because prices declined for the substantial exports of herring products. Costs in general are increasing while prices are not. Exports to the Soviet Bloc countries decreased in 1963.

It is generally agreed that only market promotion will make possible a continued increase in fishery trade at a profit. But there is disagreement as to how such a program should be financed and carried out.

The Danish Fishery Exporters Association has begun a market promotion program, primarily for exports, to be financed by its members and others who would benefit from increased trade. Efforts will be made to increase present markets, sell higher-priced fish in the Middle East, and expand the Austrian market. Slogans will be developed for use in three languages. Quality will be stressed. In addition, aid will be sought from the Agriculture Marketing Committee which has a fine record in marketing food products on a worldwide basis.

To help cultivate the United States market, the Danish Government will refill the fisheries attache post in New York City and may sponsor a Danish Fish Week at the Danish pavilion at the New York Worlds Fair. The Danish Fisheries Ministry has only limited funds for market promotion.

Herring Marketing Problems: Danish and Swedish herring fishermen and exporters and West German importers reached no final solution to the 1963 season's herring marketing problems. The difficulties were discussed in early February 1963 at a meeting in Copenhagen called by Denmark's Fishery Exporters Association. Herring landings for food were heavy in Denmark in 1963, and about 70 percent of the supply was landed by Swedish cutters. Prices in West Germany were much lower than in 1962. Catch limits were instituted but did not work well, in part, because Swedish cutters unloaded their limits in Denmark and then took the balance to West Germany, further depressing prices. At the February meeting it was agreed that the Danish and Swedish fishermen must cooperate in seeking limits on catches, and must eventually establish minimum price regulations for herring. Both must meet the needs of the West German importers. The problems will be further discussed at another meeting which will probably be held in Germany in April 1964.

Herring Catch Forecasts: According to Danish herring biologists, the 1964 herring season will be based on the 1962 year class and is expected to be normal--better than in 1963.

Norwegian biologists predict an abundance of herring in the Skagerrak Sea during the next few years. Danish herring meal and oil producers are considering the forecast, and may expand production facilities in that area.

Danish-Polish Relations: Poland has expressed dissatisfaction with the exclusion of its fishing vessels from Greenland waters within 12 miles of shore. (The Polish vessels had not established traditional fishing rights when Greenland's 12-mile fishing limits were established.) The Polish Vice Minister for Navigation and Fisheries visited Denmark February 5-9, 1964. Although Poland and Denmark have some mutual interests in Eastern Baltic Sea fishing, the Vice Minister's primary interest was in having the ban in Greenland lifted. The Danish response was that Poland could not be accommodated without doing the same for other countries. Since the latter was not possible, the status quo must continue.

In February 1964 a Danish shipyard in Odense obtained a contract to build a fish-freezer mothership for Poland. The 5,000-ton steel vessel will be designed to take catches from trawlers in the open sea. It will be strengthened for navigating in ice-filled waters. The contract seems somewhat unusual since Poland has shipyards in Gdansk and Gdynia which are building similar vessels for both the Polish and the Soviet fishing fleets. Provisions in the Danish-Polish trade agreement for ship construction in Denmark are said to be responsible for the contract. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 19, 1964.)

* * * * *

Denmark (Contd.):

January-September 1963: Landings of fish and shellfish at Danish ports by Danish fishing vessels during the first 9 months of 1963 were 12 percent greater than in the same period of 1962, which was a record year for Denmark's annual fishery landings.

Danish Fishery Landings, January-September 1963 with Comparisons

Species	Jan.-Sept. 1/ 1963	Jan.-Sept. 1962	Jan.-Dec. 1962
	(Metric Tons)		
Landings in Denmark by Danish Vessels:			
Salt-Water Fish:			
Flatfish	52,072	41,100	65,600
Cod	54,867	48,200	62,904
Herring	203,368	196,100	260,769
Other salt-water fish 2/	310,995	275,800	350,942
Total salt-water fish	621,302	561,200	740,215
Fresh-Water Fish and Shellfish:			
Pond trout	5,766	5,700	7,838
Fresh-water fish	2,714	2,500	4,296
Mussels & starfish	8,994	10,800	20,671
Shrimp, lobsters, etc.	5,457	5,100	6,335
Total fresh-water fish and shellfish	22,931	24,100	39,140
Total fish and shellfish	644,233	585,300	779,355
Landings in Denmark by Foreign Vessels	93,581	77,000	107,463
Danish Landings in Foreign Ports of:			
United Kingdom, Sweden, & Netherlands	3,884	5,500	7,443

1/Preliminary data from Ministry of Fisheries.
2/Mainly industrial fish for fish meal and oil, ensilage, trout food, and fur-animal food; 1963 total includes estimated 140,000 tons of sand eels, 45,000 tons Norway pout, and 40,000 tons of whiting.

Flatfish landings in the first 9 months of 1963 were mostly plaice and well ahead of the same period in 1962. But the cold winter cut down common sole catches sharply. Cod landings were relatively heavy and affected by the cold winter only in the Baltic Sea. Landings of herring were slightly ahead of the previous year but only an ordinary annual total was forecast by biologists. "Other salt-water fish" landings were primarily industrial fish. Catches of sand eels and whiting were very good but Norway pout landings were down. Pond trout production, despite the hard winter, was slightly better than in 1962. Most of the total for "shrimp, lobsters, etc." consisted of deep-water shrimp. Landings of Norway lobsters were lower than in 1962 because of the cold winter. (Regional Fisheries Attache for Europe, Copenhagen, January 29, 1964.)

* * * * *

1963: The Danish fishing industry during the last half of 1963 continued at the same pace as in the first six months of the year and set a new record in landings and exports. Denmark's fishery landings (by Danish vessels and foreign vessels in Danish ports) in all of 1963 were 6 percent greater than the previous year. In 1963, Danish fishing vessels landed 821,127 metric tons of fish at Danish ports; an additional 143,322 tons were landed at Danish ports by foreign vessels. The 1963 landings of plaice, cod, whiting, and sand eels were at a new high and pond trout production was greater than in 1962.

Danish Fishery Landings, 1962-1963

Species	1/ 1963	1962
	(Metric Tons)	
Flatfish 2/	67,561	65,600
Cod	67,257	62,904
Herring	283,612	260,769
Brisling	9,153	12,131
Mackerel	7,098	7,127
Hornfish	1,989	2,718
Other salt-water fish 3/	349,761	328,966
Eels	3,979	3,907
Pond trout	7,882	7,838
Fresh-water fish	1,210	389
Mussels	13,575	18,352
Starfish	1,767	2,319
Shrimp, lobster, etc.	6,283	6,335
Total	821,127	779,355
Landings in Denmark by foreign vessels	143,322	107,463
Danish Landings in Foreign Ports of: United Kingdom, Sweden, Netherlands, Norway, West Germany	4,069	7,443

1/Preliminary data from Ministry of Fisheries.
2/Plaice, dabs, and flounders.
3/Mainly industrial fish for fish meal and oil, ensilage, and trout and fur-animal feeding.

Prices for industrial fish during 1963 remained at the same level as in 1962, but food fish prices averaged lower because of a drop in prices for herring. It was generally admitted that most fishermen had a good year in 1963.

Denmark's exports of fishery products and byproducts also reached new levels in 1963--351,000 metric tons valued at 615 million kroner (US$89.2 million). This was an increase of 10 percent in quantity and 4 percent in value from 1962. But exports to the United States--mostly pond trout, cod fillets, Norway lobster, and canned herring--declined more than one-third both in quantity and value. This was partly because of better markets for those products in European countries. At the end of the year, Danish exporters were complaining of keener competition, lower prices, and the need for more market promotion. A Fisheries Ministry official told Danish marketers that they should consider combining their businesses in order to gain the financial and marketing advantages enjoyed by their larger foreign competitors.

Minimum prices and minimum sizes for both plaice and Norway lobsters were subjects of great interest during 1963, but solutions were left for further study in 1964. Efforts to

Denmark (Contd.):

make fish sorting uniform in the various ports also got under way during the year.

The Soviet Fisheries Minister returned the Danish Fisheries Minister's visit to the Soviet Union during 1963 when he toured Denmark and the Faroe Islands. No further headway was made by Denmark toward gaining a market in the U.S.S.R. for canned fish, fish meal, and frozen herring. The Soviet Minister's request that Soviet vessels be permitted to transfer their catches in the 6- to 12-mile zone off the Faroe Islands after the 12-mile fisheries limit became effective in March 1964 was refused.

Record Faroese exports of fishery products in 1963 amounted to 134 million kroner ($19.4 million). They constituted 98 percent of all exports and were 8 percent greater than in 1962. The most important exports on the basis of value were: wet salted fish 53.2 million kroner ($7.7 million); dry salted fish 31.5 million kroner ($4.6 million); iced fish 19.4 million kroner ($2.8 million); frozen fish 11.9 million kroner ($1.7 million); and salted herring 11.7 million kroner ($1.7 million).

Greenland's 1963 cod catch dropped more than one-third from the previous year but salmon landings were higher. The new fish-processing plant at Godthaab (financed by Danish, Faroese, and Greenland interests) operated far below capacity during the year. Negotiations are under way with fishermen from Norway, Denmark, and the Faroe Islands to land fish at Godthaab and to train Greenlanders as fishermen. (United States Embassy, Copenhagen, January 31, and Regional Fisheries Attache for Europe, February 12, 1964.)

* * * * *

FISHERY PRODUCTS EXPORTS, JANUARY-SEPTEMBER 1963:

Exports to All Countries: Denmark's exports of fishery products and byproducts to all countries in the first 9 months of 1963 set new records in both quantity and value (table). All of the major categories except processed fish were up in quantity exported. Exports of fish meal, solubles, and other fishery byproducts for the period, while up 16 percent in quantity, dropped only slightly in value. Exports of flatfish, herring, and cod fillets were up substantially, but the greater quantity of herring exported was down in value from the previous year because of lower prices.

Danish Exports of Fishery Products and Byproducts, January-September 1963 and Year 1962

Products	January-September 1/1963			Percentage Change from 1962		Calendar Year 2/1962		
	Quantity	Value		Quantity	Value	Quantity	Value	
	Metric Tons	1,000 Kr.	US$1,000	%	%	Metric Tons	1,000 Kr.	US$1,000
To all Countries:								
Fresh fish	140,700	222,800	32,306	+10	+ 1	179,500	312,000	45,240
Frozen fish	32,500	104,400	15,138	+24	+18	39,600	132,500	19,212
Processed fish	11,200	50,100	7,265	- 7	+ 9	19,500	73,500	10,658
Fish meal, solubles, etc.	55,100	50,200	7,279	+16	- 1	63,900	66,400	9,628
Total	239,500	427,500	61,988	+12	+ 5	302,500	584,400	84,738
Fish oils	15,600	13,300	1,929	+42	+64	15,200	10,600	1,537

1/Preliminary data from the Ministry of Fisheries.
2/Record year for quantity and value.
Note: One Danish kroner equals US$0.145.

Exports to the United States: Denmark's exports of fishery products and byproducts to the United States in the first nine months of

Danish Fishery Products Exports to the United States by Species and Product, January-September 1963 and Change from 1962

Product	1963 January-September			Percentage Change from 1962		1962 January-December		
	Qty.	Value		Qty.	Value	Qty.	Value	
	Metric Tons	1,000 Kr.	US$ 1,000	%	%	Metric Tons	1,000 Kr.	US$ 1,000
Fresh and Frozen:								
Pond trout	562	4,399	638	- 5	- 2	969	7,377	1,070
Other trout & salmon	-	-	-	3/	3/	58	525	76
Trout eggs	1	67	10	- 18	- 18	1	84	12
Flatfish	110	650	94	- 30	- 48	226	1,666	242
Fillets:								
Flatfish	80	210	30	+140	+113	23	119	17
Cod	4,484	13,901	2,016	+ 5	+ 7	7,903	24,506	3,553
Herring	-	-	-	3/	3/	5	10	2
Other	85	335	49	- 38	- 44	607	2,147	310
Lobster, Deep-water	142	2,953	428	- 31	- 32	308	6,562	952
Other	9	22	3	- 30	- 82	14	126	18
Processed:								
Salted	33	65	9	- 26	- 11	122	243	35
Smoked	1	8	1	- 33	- 64	1	34	5
Canned:								
Brisling and herring	401	2,182	316	- 72	- 80	1,560	6,249	906
Shrimp	130	1,228	178	- 18	- 4	209	1,717	249
Mussels	34	209	30	+117	+101	24	154	22
Other	31	194	28	+ 25	+ 24	31	152	22
Semipreserved:								
Caviar	12	137	20	- 7	- 3	16	179	26
Other	1	3	4/	+ 20	+ 65	1	3	4/
Fish solubles	300	354	51	+200	+218	100	80	12
Total	6,386	26,777	3,883	- 12	- 15	12,187	51,932	7,530

1/Record year for quantity and value.
2/Comparable exports in 1962 amounted to 220 pounds and $180.
3/Comparable exports in 1962 amounted to 9,920 pounds and $1,495.
4/Less than $1,000.
Source: Preliminary data from Ministry of Fisheries.
Note: One Danish Krone equals US$0.145.

* * * * *

Denmark (Contd.):

1963 dropped 12 percent in quantity and 15 percent in value from those in the same period of 1962. All of the major export items were down substantially except cod fillets (up 5 percent in quantity and 7 percent in value). Exports of pond trout were down 5 percent from those in 1962 and the value was 2 percent lower. Exports of flatfish fillets, canned mussels, and fish solubles were up substantially from the 9 months in 1962 but those are not among Denmark's major export products to the United States.

* * * * *

Exports to EEC and EFTA Countries: The value of fishery products and byproducts exported to the European Common Market (EEC) and European Free Trade Association (EFTA) countries in the first 9 months of 1963 was higher than in 1962 (table). Denmark's exports to West Germany, the United Kingdom, and Sweden ranked in that order on the basis of value; Italy ranked fourth, the United States dropped to fifth place. (Regional Fishery Attache for Europe, United States Embassy, Copenhagen, January 29, 1964.)

Danish Exports of Fishery Products and Byproducts, by Area and Country, January-September 1963

Areas	January-September		
	1963 Value		Percentage Change of Value from 1962
	Million Kroner	US$ Million	%
European Common Market (EEC)	178	25.8	+ 5
European Free Trade Association (EFTA)	168	24.4	+ 7
East Bloc	24	3.5	+ 4
Other	71	10.2	+13
Total	441	63.9	+ 7
Major Importing Countries:			
West Germany	107	15.5	+ 2
United Kingdom	84	12.2	+ 3
Sweden	43	6.2	+16
Italy	28	4.1	- 3
United States	27	3.9	-15

* * * * *

VESSEL STABILITY REGULATIONS AND RECOMMENDATIONS:

Danish craft over 20 gross tons have been operating under new regulations with regard to stability tests since October 1, 1963. The changes resulted from the loss of 3 steel cutters in February 1962 and additional vessel losses later that fall. The new regulations excerpted from announcements dated November 15, 1952, and May 29, 1963, on regulations for ship construction and equipment, section 53, read as follows:

"(a) In the case of every ship of 20 tons gross tonnage or over, the keel of which being laid on the 1st of October 1963 or later, there shall be submitted at the earliest possible opportunity, provisional information and calculations regarding the elements of stability of the ship, for consideration by the Directorate. When the ship is completed, an inclining test shall be carried out under the supervision of the Ships Inspection Service and final calculation of the elements of stability of the ship shall be made and furnished to the Directorate.

"(b) The Directorate may further direct that every ship shall undergo an inclining test under the supervision of the Ships Inspection Service, and may require to be furnished with such information and calculations as are dealt with in paragraph a.

"(c) For the purpose of ensuring the stability of the ship under normal service conditions, the Directorate may make such requirements as may be deemed necessary from the examinations made.

"(d) After completion of the stability examination, the master of the ship shall be supplied with all such information concerning the elements of stability that is necessary for the safety of the ship in normal service in undamaged condition.

"(e) The Directorate may exempt individual ships or types of ships from complying with all or some of the provisions of paragraph a."

It is reported that the new regulations have required many Danish vessels to take on more ballast and carry a smaller catch. Investigations showed that comparable vessels in other countries, the Netherlands, for example, were carrying more ballast. In addition, the Dutch vessels carried iced fish with a specific gravity of 0.75 whereas the Danish vessels carried industrial fish with a specific gravity of 1.0.

Additional Recommendations: Fishermen also have been informed by the Directorate of the Danish Government Ships Inspection Service that a responsible skipper and his crew should follow certain obvious rules when their vessel goes to sea. These rules are:

Denmark (Contd.):

"1. All oil tanks should be full on departure from port. Oil should not be used from bottom tanks until this is necessary for the operation of the engines.

"2. Since the freeboard is a very important element in the safety of a loaded vessel, the catch taken on board should be such as to correspond to a suitable freeboard. As a general rule a freeboard of less than 10 centimeters (3.937 inches) cannot be considered adequate. For many vessels this will mean that industrial fish can only be carried in the aft hold.

"3. All fishing gear and other large weights should be stowed as low in the vessel as possible.

"4. On-deck stowage of fish boxes should be restricted. If carried on deck, they should be so stowed as to permit water entering the boxes to drain off readily. It should be remembered that boxes stowed on or over the deck will impair the stability of the vessel; in such cases additional ballast should be taken on board.

"5. The hold should be subdivided by permanent bulkheads and be provided with pillars with grooves for loose planking. Ice and catch should be secured against shifting by means of planking fixed in the grooves of pillars.

"6. Hatches and ice-covers should be properly secured when not in use during fishing.

"7. All doors in deck house and forecastle should be kept closed and secured in adverse weather conditions. It is pointed out that water under certain conditions may accumulate in the forecastle and therefore proper draining must be provided from this space. The hawsepipe must also be secured in an efficient manner.

"8. Air pipes leading to oil tanks should either be carried to a sufficient height or secured in such a way as to prevent water from penetrating into the oil tanks.

"9. Wheelhouse doors should as far as possible be constructed so as to open outwards only.

"10. Freeing ports should be sufficient in number. If provided with flaps these shall always be capable of functioning and must not be locked in bad weather.

"11. Automatic steering should never be used in bad weather, because such steering prevents the vessel from being handled with due regard to wind and weather conditions." (Regional Fisheries Attache for Europe, Copenhagen, February 5, 1964.)

Note: See Commercial Fisheries Review, January 1963 p. 87.

* * * * *

DANISH FISHERMEN PROTEST CARELESS DISPOSAL OF SOVIET FISHING GEAR:

A sharp protest has been sent to the Soviet Ambassador in Copenhagen by a fishermen's association in Skagen, Denmark, accusing Russian trawlers of carelessly disposing of imperishable nets of nylon and perlon in Danish waters. The discarded nets drift widely and can damage Danish gear. In some cases, the discarded nets are reported to have become entangled in the propellers of Danish cutters, placing them in a dangerous situation when the weather is stormy. Danish fishermen have also reported damaged trawls as a result of discarded Soviet herring barrels which have been thrown overboard. The Danish fishermen in Skagen, one of Denmark's largest fishing ports, want the Russian trawlers to take home the condemned gear and barrels or sink them in deep water in accordance with existing agreements.

Similar complaints were made in the last half of 1962. The normal course is for such complaints to be made to the Danish Fisheries Ministry. If well documented, they are then forwarded through the Foreign Ministry. Skagen fishermen this time have taken a more direct approach to the Soviet Ambassador. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 19, 1964.)

* * * * *

COPENHAGEN FISHERIES TRADE FAIR TO BE HELD IN SEPTEMBER 1964:

Sponsored by the Danish fishing industry, the 5th International Fisheries Trade Fair will be held September 11-20, 1964, in the Exhibition Hall "Forum" of Copenhagen. About 85 percent of the available exhibition area has already been reserved. At the 4th

Denmark (Contd.):

International Fisheries Trade Fair in 1962, fisheries exhibits from 14 nations were presented. Those included vessel engines from 33 firms in 11 countries.

Further information about the Fair may be obtained from The International Fisheries Trade Fair, 17 Blagaardsgade, Copenhagen N, Denmark. Telephone Luna 2001. Telegrams UNIFESAS.

Honduras

FISHERIES INVESTMENT OPPORTUNITY:

Fishermen on the Island of Utila, Bay Islands, Honduras, wish to contact an investor willing to install an ice plant, freezing equipment, and necessary power plant on the island. The community would provide a site at no cost to the investor. A spokesman for the fishermen has stated that fishermen on the island, using their own vessels, can easily catch 5,000 pounds of fish per day. A plan is envisioned whereby fishermen on the Island of Utila would contract to sell their entire catch to an investor installing refrigeration equipment; the investor would take all profits from export sales; and the price of the fish caught by the islanders would be determined by contract negotiations with a fishermen's cooperative.

Although no detailed study has been made, it is estimated that an investment of at least $75,000 would be required to install a modest ice plant, freezer, and power plant on the island. However, it would be desirable to first obtain a tax and customs duty concession from the Honduran Government before entering into an investment of this nature. Only in this manner could the necessary equipment be imported into the country without payment of high duties. (A number of new industries have been able to obtain similar concessions from Honduras in the past.)

The investment opportunity should be carefully explored by any prospective investor before entering into negotiations. For additional details write to Frank Spencer Morgan, Utila, Islas de la Bahia, Honduras. (United States Consulate, San Pedro Sula, February 13, 1964.)

Iceland

FISHERMEN PROTEST EX-VESSEL GROUNDFISH PRICES:

A five-member board of arbitration in Iceland has determined that there will be no increase in the ex-vessel prices of cod and haddock during the current winter season (January through May 1964). The decision of the arbitration board is binding under the fish-pricing procedures established by the Icelandic Parliament in late 1961. However, fishermen have strongly protested the ruling and have the support of the Social Democrats, the Reykjavik Seamen's Union, and the Icelandic Federation of Labor. The Icelandic Government has promised to look into the matter.

The fishermen's income is based on the value of the catch, of which they receive a share. Unlike most occupational groups, they did not benefit from the 15-percent general wage increases granted in December 1963. The prices paid for cod and haddock, and the fishermen's share of the catch, were not increased during 1963.

* * * * *

GOVERNMENT PASSES BILL TO AID FISHING INDUSTRY:

The Icelandic Government's bill to aid the fishing industry was passed by the Althing (Parliament) on January 30, 1964. The new law increases the retail sales tax from 3 to $5\frac{1}{2}$ percent, rather than 5 percent as originally proposed. The income from the additional one-half percent will enable the fish-freezing plants to pay more for cod and haddock. This, in turn, will benefit the fishing vessel owners and the fishermen. The law also authorizes the Government to postpone various projects for which provision had already been made in the 1964 budget. In addition, the Government

Iceland (Contd.):

indicated in the explanatory notes to the bill that anticipated reductions in certain subsidies would be postponed.

While not denying the need to help the fishing industry, the opposition party argued during the Althing debate on the bill that tax increases for that purpose were unnecessary. (United States Embassy, Reykjavik, February 4, 1964.)

Ireland

TROUT FARMING EXPANDED:

Kerry County, Ireland, has gained a new trout farm which should eventually have a capacity of 100,000 fish. Located in Dingle, the farm was operating 5 ponds containing about 2,000 fish in January 1964. By the end of the year it was expected to have over 50 ponds. A large cold-storage plant will also be built at the farm, which is operated by a firm based in Antwerp, Belgium. (The Fishing News, January 17, 1964.)

Note: See Commercial Fisheries Review, June 1962 p. 47.

Israel

FREEZER-TRAWLER OPERATIONS EXPANDED:

Israel's first freezer-trawler, the Azgad I, began operating in 1961 and made good catches from fishing grounds off Northwest Africa. The owners expanded offshore operations in 1963 when they acquired the Azgad II, formerly a factoryship which was converted to a freezer-trawler vessel by a shipyard in Oslo, Norway. The Azgad II has a freezing capacity of 16 to 20 metric tons of fish per day, and a storage capacity of 300 tons of frozen fish. It is manned by a crew of 35, and driven by a 1,200-horsepower engine at 12½ to 13½ knots.

The firm operating the two freezer-trawlers has received several proposals for joint ventures with fishing companies in Africa. The Israeli firm, which is planning further development, is said to be considering the proposals (Alieia, November 1963.)

Note: See Commercial Fisheries Review, April 1962 p. 51.

Japan

FROZEN YELLOWFIN TUNA EXPORT MARKET TRENDS:

Since December 1963 large quantities of Japanese frozen yellowfin tuna shipped to the United States from Japan proper have been rejected by United States canners due to "green meat" condition. Rejects of 20-40 percent per shipment have not been uncommon, and in some cases as much as 60 to 70 percent of shipments have been rejected. In an extreme case an entire shipment was said to have been rejected.

Reportedly, the high percentage of rejects is said to have depressed the Japanese frozen yellowfin export market. As of the end of January 1964, gilled-and-gutted frozen yellowfin shipped to the United States from Japan proper were quoted at about US$335 a short ton f.o.b., but the market was described as slow. Yellowfin transshipped from the Atlantic Ocean were quoted at $300-310 a short ton f.o.b. Las Palmas. (Suisan Tsushin, January 27, 1964.)

* * * * *

FROZEN TUNA EXPORTS TO EUROPE AND AFRICA:

April-December 1963: A total of 49,899 tons of frozen tuna was approved by Japan for export to Italy, Yugoslavia, Czechoslovakia, Canary Islands (Las Palmas), and other countries during the period April 1-December 31, 1963, according to data compiled by the Japan Frozen Foods Exporters Association.

Japanese Frozen Tuna Exports to Europe and Africa
April-December 1963

Country	Species 1/					
	Albacore	Yellowfin	Big-Eyed	Skipjack	Bluefin	Total
	(Metric Tons)					
Italy	984	22,378	5,662	100	4,363	33,487
Yugoslavia	1,025	4,504	1,482	347	1,434	8,792
Czechoslovakia	-	83	1,294	220	190	1,787
Canary Islands (Las Palmas)	299	461	297	174	253	1,484
Other	1,159	445	1,109	1,109	527	4,349
Total	3,467	27,871	9,844	1,950	6,767	49,899

1/Not identified as to kind of product--round, gilled-and-gutted, fillet, etc.

Shipments of frozen tuna from Japan proper included in the total of 49,899 tons were: Italy, 3,193 tons yellowfin and 338 tons bluefin; Las Palmas, 10 tons big-eyed and 47 tons bluefin; to other countries, 200 tons yellowfin tuna. (Fisheries Attache, United States Embassy, Tokyo, February 10, 1964.)

* * * * *

Japan (Contd.):

April-October 1963: A total of 32,764 metric tons of frozen tuna were validated for export to Italy, Yugoslavia, Czechoslovakia, and Ghana during April-October 1963, according to data compiled by the Japan Frozen Foods Exporters Association. (Suisan Tsushin, January 22, 1964.)

Japanese Frozen Tuna Exports to Europe and Africa, April-October 1963

Country	Species1/					Total April-October	
	Albacore	Yellowfin	Big-Eyed	Skipjack	Bluefin	1963	1962
	(Metric Tons)						
Italy	709	16,428	3,033	5	2,706	22,881	21,225
Yugoslavia	830	3,781	1,083	347	1,052	7,093	4,610
Czechoslovakia	-	83	1,022	220	190	1,515	453
Ghana	-	97	338	786	54	1,275	420
Total	1,539	29,389	5,476	1,358	4,002	32,764	26,708

1/Not identified as to kind of product, as round, gilled-and gutted, fillet, etc.

* * * * *

CANNERS DEVELOPING DOMESTIC CANNED TUNA SALES:

The large Japanese fishing companies are reported to be aggressively pushing their packs and sales of canned tuna in Japan. This trend has become conspicuous since the latter half of 1963 and is attributed in part to the upswing in domestic consumer demand for highly flavored canned tuna products. However, the real beginning of this trend is said to lie in the emphasis placed several years ago by the major companies on developing and capturing the domestic canned tuna market. Since then, the companies have come out with different forms of flavored canned tuna products, of which one of the better known products is the "tender tuna" pack.

The competition between packers, large and small, is said to be getting greater, with the larger companies actively promoting their products through different communication media. For example, one firm planned to launch a large sales campaign beginning February 1, 1964. As an inducement to consumers, that firm is offering six sets of foreign stamps for every 2 or 3 of their canned tuna labels (number of labels depending on can size) turned in to the firm. (Minato Shimbun, January 26, 1964.)

* * * * *

EXPORTS OF CANNED TUNA, JANUARY-OCTOBER 1963:

A total of 3,728,484 cases of canned tuna valued at US$29 million was exported by Japan during January-October 1963, according to data compiled by the Japan Export Canned Tuna Packers Association.

The United States took 57.8 percent of Japan's canned tuna exports valued at $17.3 million during the 10-month period, most of which was tuna in brine. West Germany ranked second as the largest importer of Japanese canned tuna with 536,209 cases valued at $3.6 mil-

Table 1 - Japanese Canned Tuna Exports by Species and Country of Destination, January-October 1963

Product	United States		Canada		West Germany		Other Countries		Total	
	No. of Cases	Value US$	No. of Cases	Value US$	No. of Cases	Value US$	No. of Cases	Value US$	No. of Cases	Value US$
Albacore:										
In oil	-	-	146,826	1,342,775	2,166	17,777	135,132	1,217,247	284,124	2,577,799
In brine	1,147,729	11,687,495	-	-	-	-	-	-	1,147,729	11,687,495
Yellowfin & Big-eyed:										
In oil	-	-	1,855	15,716	223,906	1,591,375	359,647	2,692,245	585,408	4,299,336
In brine	310,891	260,021	-	-	-	-	-	-	310,891	260,021
Skipjack:										
In oil	-	-	20,806	163,661	88,470	599,547	255,363	1,939,938	364,639	2,703,146
In brine	694,966	5,280,436	-	-	-	-	-	-	694,966	5,280,436
Yellowfin, Big-eyed, Skipjack (in tomato sauce and seasoned)	4,614	37,758	10,297	92,544	221,667	1,407,400	104,149	694,930	340,727	2,232,632
Total	2,158,200	17,265,710	179,784	1,614,696	536,209	3,616,099	854,291	6,544,360	3,728,484	29,040,865

Note: Standard case equivalent to 48 7-oz. cans.

Japan (Contd.):

Table 2 - Japanese Canned Tuna Exports by Species and Type, January-October 1963

Product	Cases 1/	Value
	No.	US$
Albacore:		
In oil	284,124	2,577,799
In brine	1,147,729	11,687,495
Yellowfin & Big-eyed:		
In oil	585,408	4,299,336
In brine	310,891	260,021
Skipjack:		
In oil	364,639	2,703,146
In brine	694,966	5,280,436
Yellowfin, Big-eyed, Skipjack (In tomato sauce and seasoned)	340,727	2,232,632
Total	3,728,484	29,040,865

1/Standard case equivalent to 48 7-oz. cans.

lion. The exports to West Germany were made up of 59 percent tuna in oil (mostly yellowfin, big-eyed, and skipjack) and the remainder was tuna in tomato sauce and seasoned. (Fisheries Attache, United States Embassy, Tokyo, February 10, 1964.)

* * * * *

MORE TUNA VESSELS MOVE TO NEW CALEDONIA AREA OF SOUTH PACIFIC:

The fleet of Japanese tuna-fishing vessels operating off New Caledonia was scheduled to be increased from 31 to 40 in early January 1964 and may be increased to 64 in April 1964.

In late 1963, at least 2 or 3 Japanese tuna vessels were arriving each day at Noumea, New Caledonia, to deliver their catches to the Japanese refrigerated vessel Eiyo Maru. There have been reports that a second Japanese refrigerator vessel will be brought to New Caledonia because the Eiyo Maru is too small to handle the present fleet's catch. (Pacific Islands Monthly, January 1964.)

* * * * *

TUNA TRANSSHIPMENT BASE IN COSTA RICA PLANNED:

An application for permission to establish a tuna transshipment base in Costa Rica was submitted by one of Japan's largest fishing companies for approval of the Japanese Frozen Tuna Producers Association. (Suisan Tsushin, January 16, 1964.)

* * * * *

BOTTOMFISH VESSEL OPERATIONS FOR 1964 IN EASTERN BERING SEA APPROVED:

On January 13, 1964, the Japanese Central Fisheries Coordination Council approved the operation of 14 motherships and 228 catcher vessels for the eastern Bering Sea bottomfish fishery in 1964. This is a reduction from 1963 of 5 motherships and 24 catcher vessels. (Suisancho Nippo, January 16, 1964.)

* * * * *

NEW SALMON FACTORYSHIP TO BE BUILT BY FISHING FIRM:

The construction of a 10,000-ton factoryship is to be started in September 1964 by a Japanese fishing firm as replacement for the 50-year old salmon mothership Kyoho Maru (7,158 gross tons). Completion date of the vessel is March 1965. The total construction cost is estimated at two billion yen (US$5.6 million). (Suisancho Nippo, January 13, 1964.)

* * * * *

FISHERY DEVELOPMENTS IN WEST AFRICA:

Following the imposition of 6 pence (7 U. S. cents) per pound duty on imports of fresh and frozen fishery products by the Ghanaian Government on October 21, 1963, Japanese fishing firms operating trawlers off the west coast of Africa began to intensify their search for other new markets and fishing bases in West Africa. One Japanese firm was recently reported to have established in Nigeria a joint company which is constructing a 1,000-ton capacity cold-storage plant. Another Japanese firm is now reported to have succeeded in arranging for the delivery of its trawl catches to a privately operated 800-ton capacity cold-storage plant in Nigeria. (Suisancho Nippo, January 25, 1964.)

* * * * *

FISH MEAL IMPORTS FROM PERU APPROVED:

The importation by Japan of 20,000 metric tons of Peruvian fish meal in February 1964 at a c.i.f. price of US$132-133 a metric ton was approved by the Japanese Livestock Bureau, Ministry of Agriculture and Forestry. Earlier in December 1963, the Bureau had approved the importation of a similar quanitity of Peruvian fish meal. (Suisancho Nippo, January 16, 1964.)

* * * * *

Japan (Contd.):

CONSOLIDATION OF WHALING OPERATIONS IN BRAZIL BEING STUDIED BY TWO JAPANESE FISHING FIRMS:

A study on the feasibility of consolidating their whaling operations in Brazil is being studied by two large Japanese fishing firms. One of those firms is a partner in a joint whaling company with a Brazilian firm, and operates the whale catcher vessels Tone Maru Nos. 8 and 11. The joint company's whale-processing plant is located at Cabo Frio in Brazil. The other Japanese fishing firm is a partner of a different Brazilian firm which is located at Recife, and operates the whale catcher vessel Daishin Maru. (Suisan Tsushin, February 18, 1964.)

* * * * *

WHALING BASES IN SOUTH AMERICA TO BE SURVEYED BY WHALING FIRM:

Whaling bases in South America were to be surveyed by an official of one of Japan's whaling firms who was scheduled to leave for Ecuador on January 28. Reportedly, he was also to personally supervise the exploration of the waters off Ecuador to which the Japanese whaling firm is sending the whale catcher vessel Seki Maru No. 8. The Seki Maru was scheduled to arrive off Ecuador in late January. (Suisan Keizai Shimbun, January 24 and 26, 1964.)

* * * * *

DECISION ON SALE OFFER OF NETHERLANDS WHALING FACTORYSHIP POSTPONED:

The Director of the Japanese Fisheries Agency met in January 1964 with officials of Japan's three large fishing companies engaged in whaling to discuss the offer made by the Netherlands Whaling Company to sell to Japan its whale factoryship Willem Barendsz (26,830 gross tons), including the factoryship's international whale catch quota of 6 percent. The companies are reported to have agreed to not act on the offer until after the 1964 meeting of the International Whaling Commission. (Minato Shimbun, January 28, 1964.)

* * * * *

NEW OCEANOGRAPHIC VESSEL DELIVERED:

Japan's newest oceanographic vessel, the Tansei Maru, built for the Ocean Research Institute, University of Tokyo, was delivered in July 1963. She was constructed expressly for oceanographic research from the keel up, and is equipped with precise deep-sea sounding instruments, a shallow-sounding sonar, a fish-shoal detector, and other measuring devices. The vessel will be used for basic oceanographic research including physics, geology, and biophysics. (National Oceanographic Data Center Newsletter, December 31, 1963.)

The Tansei Maru, newest oceanographic research vessel.

日本

Republic of Korea

ITALIAN-FRENCH CONTRACT TO BUILD FISHING VESSELS MODIFIED:

On January 21, 1963, an Italian-French consortium signed a contract with the Government of the Republic of Korea to supply Korea with 159 modern fishing vessels at a cost of about US$58 million. The obligations under the contract were reduced by addenda signed December 11, 1963, and February 3, 1964, by representatives of the Italian and French groups and the Korea Marine Industry Development Corporation, assignee of the Government of Korea. The contract now calls for the delivery of only 91 vessels valued at about $35.8 million, with the understanding that, if both sides agree, a contract for the balance may be negotiated not later than December 30, 1965.

Under the amended contract, the French group will build and deliver 10 side trawlers of 130 gross registered tons (g.r.t.), 61 tuna long-line vessels of 144 g.r.t., 2 stern trawlers of 220 g.r.t., 2 stern trawlers of 1,300 g.r.t., and 1 research and training vessel of 300 g.r.t. The delivery schedule calls for 51 of those vessels to be delivered in 1964 and 1965, and the remainder in 1966. The total price of the vessels (not including the engines which will be installed by the Italian group),

Republic of Korea (Contd.):

amounts to US$18,679,678. A payment guarantee has been issued by the Bank of Korea. Payments equalling 10 percent of the total price will be made as a down payment by September 30, 1964.

Under the amended contract, the Italian group will deliver 15 vessels, as well as marine motors and equipment for the French vessels described above. The delivery schedule for the Italian vessels calls for 6 to be delivered in 1965 and the remainder in 1966. The total price of the Italian vessels and supplies amounts to $17,152,970. A payment guarantee has been issued by the Bank of Korea. Payments equalling 10 percent of the total price will be made as a down payment by September 30, 1964. (United States Embassy, Seoul, February 14, 1964.)

Note: See Commercial Fisheries Review, Dec. 1963 p. 72, Oct. 1963 p. 60, Apr. 1963 p. 63, and Feb. 1963 p. 67.

Mexico

LARGE-SCALE EXPANSION OF FISHERIES INDUSTRIES PLANNED:

A broad program to provide the public with more fishery products to improve the protein content of the national diet has been launched by the Mexican Government. The program includes production of fishery products, processing and refrigeration, transportation, distribution, and public education. The campaign has been featured by the Mexican press and was to be followed by a large marine resources exhibition scheduled to open on February 14, 1964. Meanwhile, construction of fishery facilities is in progress and research on fishery resources has been augmented.

The program to develop Mexico's fisheries is the responsibility of the National Advisory Commission on Fisheries (Comision Nacional Consultiva de Pesca, known as CNCP) which was organized in 1962. The President of the Commission is General Abelardo L. Rodriguez, who was formerly President of the Mexican Republic and also a leading pioneer of the fishing industry. Other officers of the Commission include the Director General of Mexico's Fisheries Department through whose office the work of the Commission and the Fisheries Department is coordinated. Other members include Government and industry leaders.

Cooperating in the program with the Ministry of Industry and Commerce, of which CNCP and the Department of Fisheries are agencies, is the National Bank of Development for Cooperatives.

The principal points of the program as announced by the President of the Commission are:

1. Establishment of plants on both coasts for production of fish protein concentrate (fish flour) for human and animal consumption. Apparently some within CNCP feel that there is insufficient raw material to do this on a large scale but an effort is planned nevertheless.

2. Exploitation of the shark resources of the Tres Marias Islands in the Pacific. This point received much press notice because of the proposal to provide the penal colony's inmates with a useful occupation.

3. Construction of industrial plants for better use of marine products. The one at Zihuatanejo, Guerrero, to develop the turtle industry, was scheduled for a February opening. Other plants are projected for the States of Colima, Veracruz, Tamaulipas, and Yucatan, and the territory of Baja California.

4. Construction of refrigeration plants for domestically marketed finfish.

5. Improving the distribution system for fish and shellfish, including a large modern distribution center in Mexico City.

6. Providing good quality fish in quantity and at reasonable prices to major population centers.

7. Training fishermen in the improvement and modernization of their activities, and perfecting the system and organization of cooperatives.

8. Creation of research centers to study the nutritive value of marine products. This work has commenced at the central laboratory.

9. Coastal patrol to "Protect coastal resources from North American fleets." According to Tiempo, the Fisheries Department's three new helicopters recently "surprised 70 Mexican boats in a closed fishing area."

10. An educational campaign among the people to extol the nutritional benefits of fish and to urge at least two seafood meals a week.

Also under way is a program to dredge sandbars at entrances to lagoons in Tamaulipas and Sinaloa, with the cooperation of the Ministry of Marine. The free passage of salt water is expected to prevent the death of large amounts of fish and shrimp.

Studies are continuing in an effort to rebuild the pearl fishery in La Paz, Baja California.

The opinion of interested observers is that three rather unrelated features of Mexico's national effort to increase domestic utilization of fishery resources are of great significance. These are all reported to be in advanced stages of development and are:

1. Centralization (in 1962) of the fisheries research work of the Department of Fisheries and CNCP in the Institute of Fisheries Biological Investigations. The Institute has pulled together several scattered activities, and high-level research is now centered in Mexico City, with work at the several coastal field stations under direct supervision of the Institute.

2. Construction of a "pilot" fishing port at Alvarado on the Gulf of Mexico, to supply fish for the Mexico City market. This 104 million peso (US$8,320,000) port is being built by the National Bank of Development for Cooperatives with private Dutch capital and with technical assistance from the Food and Agriculture Organization of the United Nations (FAO). Land fill, docks, and buildings are on the way to completion and the first of several experimental fishing vessels has arrived from the Netherlands.

3. The First Salon of the Sea and Its Resources was an ambitious exhibit held in conjunction with the Seventh Home Fair which opened for 30 days commencing February 14 in Mexico City. CNCP and numerous cooperating agencies set up an exhibit of marine science and demonstration at that Fair which occupies 4,300 square yards. The objective was to bring home to the landlocked inhabitants of the capital city some idea of the importance of the ocean in fulfilling their nutritional needs.

The present campaign in Mexico for increasing domestic consumption of fishery products to improve the national diet has received considerable attention in the Mexico City press as it gains momentum. Excelsior, one of the leading daily newspapers, carried a front page headline story on

Mexico (Contd.):

January 2, 1964, outlining the program. On the following day, it devoted its lead editorial to support of the program. Other newspapers carried shorter articles. The news magazine Tiempo carried a four-column illustrated article in its business section on January 20, 1964.

Excelsior's editorial was reported to be like a call to arms, urging the people of Mexico to look to their 9,000 kilometers (5,600 miles) of richly endowed coastline, thus "changing the customs and habits of a nation looking mostly to the earth as a means of sustenance." Mexico is asked to emulate the maritime people of South America, Japan, and Norway in harvesting the sea. In a country that is increasing by a million persons a year the nutritive needs must be met by a combination of the resources of the land and the sea. With a wealth of seafood available, "there is no social, economic, or moral justification for people to subsist on beans and tortillas only," the editorial stated.

Several weeks before its opening date, the marine resources exhibition planned with the February 14 Seventh Home Fair was already receiving considerable attention in the local press.

It was reported that those responsible for the various parts of the program are well aware of the magnitude and complexity of the task facing them. Points of difficulty mentioned by responsible Mexican officials and industry leaders include the following:

1. The diet of the Mexican people in general is protein deficient, but the deficiency can be corrected by increased use of fishery products.

2. A built-in resistance to fish products exists and has existed since before the time of the Aztec Empire, largely as a matter of habit resulting from the general unavailability of fishery products at low prices in most parts of the country.

3. There is no general aversion to fishery products as evidenced by the heavy demand among people who can afford it and who live where it is available.

4. A publicity campaign can increase the use of fishery products. However, there is not much point in telling people about fish if it can't be supplied regularly and in quantity at low cost. A full-fledged educational program, if not backed up by production and distribution, would result in failure of the whole effort.

5. Conversely it would be equally futile to catch and distribute great quantities of fish if the people haven't been educated to eat it. For one thing, the market would be ruined by price cutting and any existing private sector of the industry would collapse.

6. Building fishing ports and experimental fishing vessels does not automatically guarantee that fish will be caught. Fleets of refrigerated trucks won't automatically transport fishery products. New cold-storage plants will not fill and empty by themselves. It will be necessary to build each type of facility at the same time and the people to operate them will have to be trained and given incentives to insure their successful operation.

7. The problems of transportation, distribution, and educational efforts will not be the same for the 5 million people concentrated in the capital city as they will be for the 30 million scattered all over the large country. Distributing fish evenly to those who need it most is believed to be a difficult matter.

8. The retail price of fishery products will have to be so low to reach those most in need that the profit factor to either the Government enterprise or the private sector will develop into a problem.

9. Coastal resources alone may prove inadequate. Mexican fishermen are by habit landbound and will have to make use of the ocean resources that are the backbone of all great fishing nations.

10. The heavy dependence of the Mexican fishery on the export market for shrimp must be replaced by a broader base of exploitation of other resources. The problem of the "one-crop" economy is well known to those planning the program. Broadening the base, however, should not in any way jeopardize the important money crop of shrimp.

Some opinions were that overemphasis of any one phase of the program could result in adverse effects. Those who are responsible for the program are working on the problem of balancing all of its aspects--catching, processing, transportation, cold storage, distribution, marketing and consumer education, not to mention resource and nutrition research. How well the complex problems are solved will determine the success of the whole program. (Fishery Attache, United States Embassy, Mexico, February 4, 1964.)

* * * * *

FIRST OF FIVE MULTIPLE-USE FISHING VESSELS RECEIVED FROM NETHERLANDS:

The first of five multiple-use fishing vessels has been received by the Mexican Government for use at the pilot fishing port at Alvarado, Veracruz, Mexico.

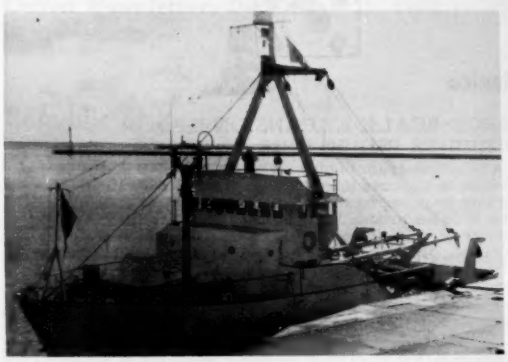


Fig. 1 - Mexican multiple-use fishing vessel built in Netherlands.

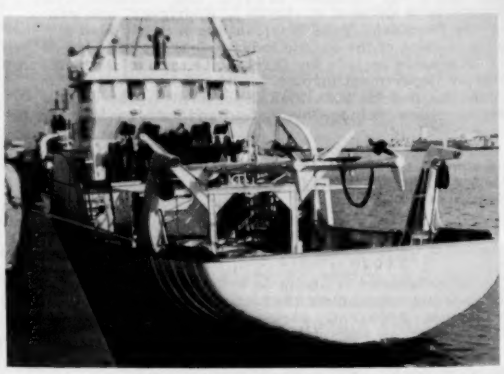


Fig. 2 - Stern view of Mexican multiple-use fishing vessel.

Mexico (Contd.):

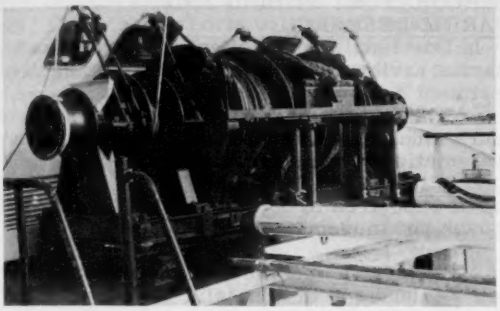


Fig. 3 - Winch stations located on bridge of multiple-use fishing vessel.

The vessels are being built in the Netherlands and are intended for use in instructing fishermen of the Alvarado region. They can be used for shrimp fishing as well as purse seining and beam trawling. They are powered by twin Diesels of 245 hp. each, driving a single shaft. Refrigerated holds have a capacity of 100 metric tons at a temperature of 1° C. (33.8° F.). The winch stations are operated from the bridge and are powered by takeoffs from the main engines. Electronic equipment aboard the vessels includes a fish-finder in addition to the depth indicator, automatic pilot, and radio. (United States Consulate, Veracruz, January 29, 1964.)

Morocco

NEW TUNA CANNERY BEING BUILT IN TANGIER:

A new tuna cannery is being built at Tangier, Morocco, by the Societe Generale de Pecheries et Conserves au Maroc. Hopes are that it will be completed in time for the 1964 Moroccan tuna fishing season which begins in April and ends in July. The major stockholders consist of four persons who are officials of the cannery, the Banque Union Parisienne and the Societe Generale itself.

The new cannery covers an area of 5,144 square yards. In addition there is a boiler shed covering 119 square yards. The plant is expected to have a capacity of 60 metric tons (66 short tons) of canned tuna a day. Plant equipment consists of ten 1,760-pound capacity containers in which the fish is boiled, an automatic continuous oiling machine 15 yards long for putting hot olive oil in the cans, and 3 vacuum cookers each with a 106-cubic-foot capacity. The equipment is all Moroccan built. In addition there are 2 American-type band saws to cut the fish, 2 Spanish and 2 French can sealers, and 1 Spanish can washer and oil recoverer. The Societe is considering purchasing a machine to pack the fish in the cans. For the time being, the cans will be packed by 150 to 200 woman.

The cannery will use Moroccan-caught bluefin (red) tuna (Thunnus thynnus), "melva" or frigate mackerel (Auxis thezard), and "sarda" or little tuna (Euthynnus alletteratus). The fish will be packed in cans of 2.8 ounces, 8.8 ounces, 1-lb. 2 ounces, 2 lbs. 3 ounces, and 5 lbs. 7 ounces for the local market and in 5.5 and 11 pound cans for the export market. The cans will contain meat from the belly, side, and back either mixed or separately.

No foreign-caught raw tuna will be used unless the Societe can obtain permission to import frozen Japanese and United States-caught bluefin tuna. The company would like to import such frozen tuna in order to keep the plant running during the entire year because the firm's catch itself will not be sufficient for that purpose. The matter is being negotiated by the company and the customs authorities. The problem appears to be that the local customs authorities want to assess a duty on the gross weight of the fish rather than on the weight to be exported alone. Even though the fish will be imported in bond, since it will not remain in Morocco, this issue is important because it determines the size of the bond assessed and the amount of its refund.

The Societe plans to sell its tuna both on the local market and abroad. Its largest foreign markets are Italy and Switzerland. Furthermore, it hopes to keep its position in the Algerian and Tunisian markets depending upon political conditions.

If the company is able to import Japanese and United States-caught tuna, it will try to enter the United States market as well as to improve its position in Europe. (United States Consulate, Tangier, February 1, 1964.)

* * * * *

CANNED SARDINE MARKET TRENDS AND EXPORTS, 1963:

The total 1963 Moroccan canned sardine pack at the end of December was reported as 1,660,000 cases, or 36.2 percent below the 1962 pack of 2,600,000 cases. Stocks on hand at the beginning of the 1963/64 season were 482,000 cases which brings supplies available for the year to 2,142,000 cases. This is about 300,000 cases below the sales program goal of 2,450,000 cases.

The Moroccan canned sardine industry has no specific plans for closing this nominal gap of about 300,000 cases. Sardine fishing has recently been resumed at Agadir in good offshore weather, but the catch has not been of commercial quality or quantity. The canneries at Safi are closed for seasonal repairs and are not expected to resume operations until mid-April when catches are anticipated to be limited since the preseason runs of sardines are generally not abundant.

Exports of canned sardines through December 1963 totaled 1,170,000 cases. Sales of canned sardines through October 1963 amounted to about one million cases. Movements significantly different from the pattern of sales indicated include large deliveries to Czechoslovakia in December and a stronger demand from West Germany. Both the Union Commerciale de l'Industrie de la Conserve (UCIC), the trade association which predominantly controls exports of sardines to the European and United States markets, and individual canners state their intentions of meeting orders as they come until supplies run out, although preference will naturally go to established customers. UCIC has recently experienced a rather unexpected success in the German market with a pack of sardines put up to American specifications, but not taken by the buyer for whom they were packed. Since the local industry is, in general terms, less than optimistic about its long-term chances for markedly expanding the demand for sardines in the European market, it is likely that orders from Germany will receive some priority.

Observers point out that the potential shortage of supply in the period between early April and late June does not seem to cause much concern to the Moroccan industry. In fact, this shortage is seen as contributing to an unaccustomed firmness in demand as well as price on the world market which is affected also by a subnormal year for the Portuguese canned sardine industry. There is confidence

Morocco (Contd.):

Moroccan Canned Sardine Exports by Country of Destination
June 1-October 31, 1963

Area and Country	Number of Cases
Franc Zone:	
France	278,840
Madagascar	23,805
Ivory Coast	21,297
Dahomey	10,235
Others	19,363
Total	353,540
Dollar Zone:	
Costa Rica	5,225
Peru	4,770
United States	2,815
Others	6,634
Total	19,444
Sterling Zone:	
Ghana	117,768
Nigeria	36,759
Tanganyika	10,825
Others	9,996
Total	175,348
Others Areas:	
West Germany	99,743
Czechoslovakia	97,628
Cuba	75,625
Italy	57,931
Benelux Countries	27,860
Austria	16,600
Poland	16,000
Finland	9,293
Others	30,869
Total	431,549
Grand Total	979,881

Source of data: Office Cherifien de Controle et d'Exportation.

that the high-quality Moroccan product may win some new customers for the future, and that it will not lose permanently any traditional market because of a temporary lack of supply. (United States Consulate, Casablanca, February 1, 1964.)

Netherlands

FISHERIES TRENDS, 1963:

Fishery landings in the Netherlands in 1963 amounted to 289,000 metric tons valued at Fl.141.5 million (US$39.1 million), according to the Netherlands Commodity Board for Fish and Fish Products. This is an increase of 13.8 percent in quantity from the 1962 landings but the value was down 12 percent.

Fishery products exports by the Netherlands during the year totaled 174,200 tons valued at Fl.183 million ($50.5 million), a drop of 1.4 percent in quantity and 4.1 percent in value as compared with the 1962 exports. It was the first time since World War II that the value of that country's fishery products exports dropped. (United States Embassy, The Hague, February 1, 1964.)

* * * * *

WHALING FACTORYSHIP OFFERED FOR SALE TO JAPAN:

The president of the Netherlands Whaling Company (Amsterdam), on his visit to Japan in January 1964, announced that his firm would like to sell to Japan the factoryship Willem Barendsz (26,830 gross tons) including the factoryship's international whale catch quota of 6 percent. Officials of the three major Japanese whaling companies were scheduled to meet in late January with Japan's Fisheries Agency Director and the Agency's Production Chief to study the Netherlands Whaling Company's offer. (Suisan Keizai Shimbun, January 26, 1964.)

New Zealand

EXPLORATORY FISHING AND MARINE RESEARCH:

In late 1963, the New Zealand Minister of Marine reviewed the investigations of his department designed to aid the fishing industry. The Minister said that during the past three years much had been achieved. Work included systematic trawling surveys during all seasons in the Bay of Plenty and in the Auckland-North Cape area to obtain knowledge of fish growth and movements.

An officer to work on tuna problems in New Zealand and in Australia had been appointed.

There had been biological studies of fish in Cook Strait. In another study, extensive marking of flatfish in South Island waters had shown that they moved in a southerly direction. Studies of the movements and growth of the commercially important elephantfish had also been made. A biologist had also been appointed to begin a study of whitebait.

A study of the Lake Ellesmere yellow-eyed mullet to provide a basis for netting regulations was completed.

Other studies showed that seals near the New Zealand coasts did not eat commercial species of fish to any extent.

The Minister recalled that a whale biologist and a technician had been appointed to study the distribution, movements, and numbers of whales, in cooperation with other New Zealand agencies.

Much, however, remained to be done, he said. He called for more exploratory fishing, particularly for tuna, and said there must be deep-water trawl surveys to find new grounds for fishermen. (Commercial Fishing, a New Zealand fishery periodical, January 1964.)

Norway

EXPORTS OF CANNED FISHERY PRODUCTS, JANUARY-OCTOBER 1963:

Smoked small sild sardines in oil was Norway's most important canned fish export in January-October 1963, accounting for 40.7 percent of the quantity and 34.3 percent of the

Norway (Contd.):

value of total exports of canned fishery products. Combined exports of smoked small sild sardines in oil, smoked brisling in oil, and kippered herring accounted for 70.1 percent of the quantity and 68.5 percent of the value of Norway's exports of canned fishery products in January-October 1963.

NORWEGIAN FIRM TO ESTABLISH FISH STICK PLANT IN NEW BEDFORD, MASS.:

Norsk Frossenfisk A/L, a joint sales organization of 110 Norwegian fish-freezing plants, has decided to build a new fish stick plant in New Bedford, Mass. It will be operated by its United States subsidiary. Production is expected to start next fall.

Table 1 - Norwegian Exports of Canned Fishery Products by Type, January-October 1963

Product	October 1963			January-October 1963		
	Quantity	Value		Quantity	Value	
	Metric Tons	N. Kroner 1,000	US$ 1,000	Metric Tons	N. Kroner 1,000	US$ 1,000
Smoked brisling in oil	518	3,508	490	4,063	27,930	3,906
Smoked brisling in tomato	93	506	71	417	2,320	324
Smoked small sild in oil	1,149	4,927	689	9,220	38,976	5,451
Smoked small sild in tomato	175	627	88	1,208	4,366	611
Unsmoked small sild in oil	249	793	111	753	2,437	341
Unsmoked small sild in tomato	8	31	4	46	172	24
Kippered herring (Kippers)	261	1,143	160	2,599	11,010	1,540
Mackerel	52	216	30	548	2,582	361
Roe unclassified	79	272	38	1,238	4,440	621
Soft herring roe	50	263	37	672	3,306	462
Fish balls	54	143	20	473	1,229	172
Other canned fish	22	157	22	138	1,035	145
Shellfish	145	1,483	207	1,290	13,879	1,941
Total	2,855	14,069	1,967	22,665	113,682	15,899

Table 2 - Norwegian Exports of Canned Fishery Products[1] by Country of Destination, January-October 1963

Country of Destination	October 1963			January-October 1963		
	Quantity	Value		Quantity	Value	
	Metric Tons	N. Kroner 1,000	US$ 1,000	Metric Tons	N. Kroner 1,000	US$ 1,000
Finland	25	143	20	127	806	112
Sweden	29	139	19	313	1,608	225
Belgium-Luxembourg	46	233	32	540	2,580	361
Ireland	12	49	7	206	726	101
France	29	110	15	236	954	133
Netherlands	27	126	18	169	619	87
United Kingdom	344	1,745	244	4,226	18,370	2,569
West Germany	70	282	39	618	2,323	325
East Germany	-	-	-	982	3,532	494
Japan	1	8	1	211	976	137
South Africa Republic	109	474	66	1,103	4,604	644
Iraq	8	32	4	40	153	21
Canada	247	1,472	206	851	5,129	717
United States	1,191	6,009	840	9,668	50,403	7,049
Australia	346	1,126	157	1,427	5,451	762
New Zealand	22	87	12	440	1,882	263
Other countries	552	1,924	269	1,776	6,281	878
Total[2]	3,058	13,959	1,950	22,933	106,397	14,879

1/Does not include exports of canned shellfish.
2/Totals are slightly larger than the combined exports of canned fish (excluding shellfish) shown in table 1.
Notes: (1)Norwegian kroner 7.15 equal US$1.
(2)See Commercial Fisheries Review, May 1963 p. 79.

The United States was the leading buyer of Norwegian canned fish during January-October 1963, taking 42.2 percent of total exports (excluding shellfish), or 9,668 metric tons valued at N. kroner 50.4 million (US$7.0 million) as compared with 11,186 metric tons valued at N. kroner 58.0 million ($8.1 million) in the same period of 1962. (Norwegian Canners Export Journal, January 1964.)

* * * * *

The fish stick plant which the United States subsidiary has been operating at Mobile, Ala., since 1955, will be moved to New Bedford. Norwegian Frozen Fish, Inc., which handles sales in the United States, will also move its office to the New England port. Frozen fish blocks, the raw material for fish sticks, will be shipped from Norway directly to New Bedford.

Norway (Contd.):

In 1963 Norsk Frossenfisk, which sells to 30 countries, distributed 44,500 metric tons of frozen fish products with a gross sales value of some Kr.190 million (US$26.5 million), as against Kr. 179 million ($25.0 million) in 1962. The Norwegian firm's biggest market is the United States which bought 12,000 tons of products in 1963. (News of Norway, February 6, 1964.)

* * * * *

ANTARCTIC WHALE OIL PRODUCTION, FEBRUARY 8, 1964:

Norway's 4 Antarctic whaling expeditions had processed 108,145 barrels of whale oil and 35,205 barrels of sperm oil, or a total of 143,350 barrels, as of February 8, 1964. This was an increase of 10,543 barrels of whale oil and 1,080 barrels of sperm oil over that processed in the same period of the 1962/63 Antarctic season. (News of Norway, February 27, 1964.)

Panama

FISHERIES TRENDS, 1963:

Panama's commercial fishery products in 1963 were valued at nearly US$9 million (since the bulk is exported, the value represents the f.o.b. export value). Less than 10 percent of that value was from sales of some 4 million pounds of fresh fish for domestic consumption.

Fig. 1 - Small fish meal plant on Taboga Island. Capacity is 12 tons per hour.

The products packed for export were about 13 million pounds of frozen headless shrimp (value f.o.b. was US$8.0 million), 100,000 pounds frozen spiny lobster tails (f.o.b. value $50,000), and 100,000 pounds of scallop meats (f.o.b. value $45,000). Most of those products were exported to the United States.

The year's landings of inedible fish species (thread herring and anchoveta) yielded 1,754 short tons (f.o.b. value $210,480) of fish meal and 44,000 pounds (f.o.b. value $3,080) of fish oil.

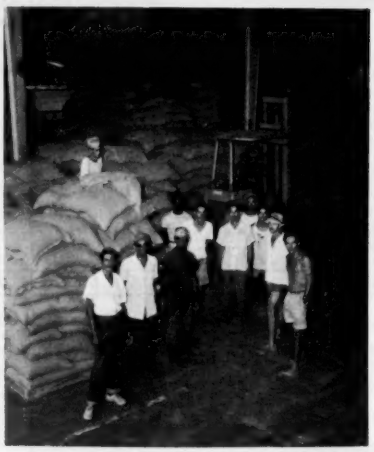


Fig. 2 - Panamanian sardine fish meal ready for export.

Panama's fishery landings for the most part are frozen for export, but some fish are marketed fresh mostly in Panama City and in the Canal Zone. Most of Panama's shrimp production (white, pink, titi, and tiger species) is absorbed by the export market, and in 1963 about 10 million pounds of frozen shrimp was exported to the United States. The 1963 shrimp

Fig. 3 - Part of the purse-seining fleet at anchor, Taboga Island.

Panama (Contd.):

production was a record one. Practically all of the fish meal produced is sold to other Central American countries and to Germany. Premium prices were reported paid by Germany for fish meal produced in Panama.

Fig. 4 - Sardine fishing off Punta Chame. Average set yields 30 short tons of fish.

Fig. 5 - Herring fishing in the Gulf of Panama.

A two-year exploratory program for spiny lobster (Panulirus gracilis), sponsored by the U. S. Agency for International Development (AID) Mission to Panama as an Alliance for Progress program, showed that Panama has the potential of producing 2 million pounds of spiny lobsters a year. The AID program in collaboration with the Cooperative for American Relief Everywhere (CARE) has helped establish two fishery cooperatives within the past two years. Assistance given by those agencies included fishing dories, a cold-storage and freezer plant, and refrigerated delivery trucks. The program was designed to assist the local provincial fishing industry and to supplement the protein-deficient diet of inhabitants in Panama's interior provinces.

Fig. 6 - Fish-meal plant in Puerto Caimito, with a capacity of 10 tons per hour.

During spiny lobster explorations (conducted by the U. S. Bureau of Commercial Fisheries chartered vessel Pelican) in the fall of 1963, scallop beds were discovered in the Gulf of Panama. Two of Panama's larger fishing firms became active in scallop fishing and in three days fishing produced as much as 30,000 pounds of scallops in the shell. Opinions in Panama were that a new fishery could be developed with a potential of possibly 10 million pounds of scallop meats a year. As many as 15 vessels were working the newly discovered scallop grounds by the end of 1963. Catch rates of scallops per vessel were high

Fig. 7 - A new 58-foot purse-seiner made in Panama.

Panama (Contd.):

and full vessel loads were taken in 2 or 3 days of fishing, working only during daylight hours. The principal market for the scallop meats is the United States. As of early 1964 fishing for scallops had stopped because the selling price was not considered profitable.

Fig. 8 - Two new 60-foot steel shrimp trawlers built in Panama.

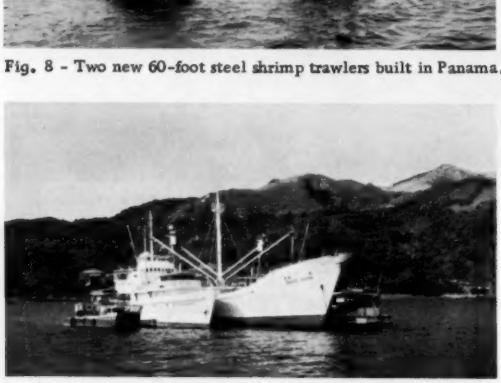


Fig. 9 - Tuna transferring operation off Taboga Island.

Fig. 10 - A new 32-foot steel lobster boat off Panama City.

The Asociacion Nacional de la Industria Pesquera was organized in 1963 for the mutual benefit of Panama's fishing industry. Because commercial fishermen have concentrated on the more profitable shrimp fishery, the newly-formed Asociacion has made efforts to develop a more diversified Panamanian commercial fishery in order to relieve the strain on the shrimp fishery and prevent overfishing of Panama's shrimp grounds.

A recommendation made by the Asociacion to the Government of Panama during the year was that a marine terminal be established inside the Panama Canal Zone under the Panamanian Government's jurisdiction so that fishing vessels may enter or leave at any time without restriction. A law was reported being prepared by the Panamanian Government which would permit the free entry of foreign sardine purse seiners into Panama's territorial waters so that their catches could be sold locally thereby increasing Panama's fish meal and oil production. Due to lack of credit and financing, Panama's fish-meal industry has not been able to move ahead to the same extent as the shrimp industry.

--Carlos A. Arosemena Lacayo, President,
Asociacion Nacional de la Industria
Pesquera Panamena,
Panama, R. de Panama

Note: See Commercial Fisheries Review, February 1964 p. 78; December 1963 p. 76; July 1963 p. 90.

Peru

RECORD ANCHOVETA CATCH FORECAST IN 1964:

Anchoveta fishing was good in Peru in 1963 and should be even better in 1964. The Director of the Institute of Marine Resources in Peru said that production in 1963 is expected to be about 5 percent above the 1962 level. The key criteria that Institute technicians use for projecting the anchoveta catch and estimating the current state of the fish supply are: (1) size of fish caught--a trend towards smaller fish is unfavorable; (2) catch per vessel trip; and (3) deaths among the birds that feed on the anchoveta. All three factors are considered favorable this year.

It was noted that anchoveta were harder to find during 1963, but the Director of the Institute said this was due largely to oceanographic reasons, and not to any significant decline in numbers.

In projecting a good year in 1964, scientists cautioned that longer run forecasts were impossible to make. The anchoveta attain maturity in about two years and, consequently, there is not a "pipeline" of fish which can be counted on for harvest in coming years. Thus, sharp losses of adult fish in one year as a result of unfavorable oceanographic conditions could spell difficulty in the following year. The great danger to the continued availability of the anchoveta supply is that a sharp decline in the fish population as the result of a "nino" (warm water moving into the normally cold currents in which the fish thrive) compounded by intensive fishing could so damage the breeding stock that production would be held down for a number of years. Barring such a combination of circumstances, fishery experts see no immediate threat to the industry stemming from short supplies.

Peru (Contd.):

Still unexplained is the decline in the yield of anchoveta body oil reported recently by a large Peruvian exporter. The firm stated that the anchoveta oil yield in early 1964 was running about 1 percent by weight of fish processed, whereas in the past yields have reached 7 percent by weight.

A financial readjustment in the Peruvian fish meal industry is taking place, according to an economist with the Institute of Marine Resources. He said that the large, well-financed, efficient producers would undoubtedly survive any transitory difficulties. On the other hand, the marginal producers face serious problems because they are poorly financed and lack efficient equipment. They may lose half of their catch during processing, whereas the major producers with modern, capital-intensive techniques are able to get a much higher yield.

The Institute of Marine Resources is sponsored by the Food and Agriculture Organization (FAO) of the United Nations. The anchoveta industry has been the Institute's primary concern; however this role is changing. FAO technicians in Peru are satisfied that the anchoveta industry is through the most critical stages of its growth. The major producers now have resources and ability to develop their own production, processing, and distribution methods. As a result, the FAO focus is shifting. First, on the technical side, the Institute plans to experiment with new fishing techniques. The group is also considering the problems of improved production, distribution, and increasing fish consumption in Peru, particularly in the Sierra region where protein foods are in short supply. (United States Embassy, Lima, January 9, 1964.)

* * * * *

FISHERIES CATCH OFF IN 1963:

The Peruvian fisheries catch during 1963 totaled 6.6 million metric tons, up slightly from the 6.5 million tons caught during 1962, according to the Sociedad Nacional de Pesqueria. The leveling off of fish production in 1963 coupled with the tightening of credit in the fish-meal industry have slowed activity in Peruvian shipyards. Of the 30 shipbuilding firms in the Callao area, some 70 percent are said to be idle.

The size of anchoveta caught out of the port of Chimbote has been declining recently. The Institute of Marine Resources in Peru is considering the possibility that this may be an indication of overfishing. Accordingly, if the trend at Chimbote continues and is substantiated by reports from other ports, it may be an indication that the anchoveta catch cannot be sustained much above present levels. (United States Embassy, Lima, February 13, 1964.)

* * * * *

PERUVIAN FACILITIES OF UNITED STATES FISHERY FIRM TO BE EXTENDED:

A United States firm is expected to invest about US$3 million to expand its fish meal and canned fish facilities in Peru, according to an announcement on January 17, 1964, of the Peruvian Minister of Finance and Commerce. The Peruvian Government has approved the new investment of the United States company which is becoming a leading firm in Peru's fishing industry. (United States Embassy, Lima, January 29, 1964.)

Poland

FISHING BASE REPORTED PLANNED IN CANARY ISLANDS:

A base for Polish fishing vessels operating off the West African coast was to be opened in February 1964 at Las Palmas in the Canary Islands, according to an article in the Polish periodical Kurier Szczecinski of December 18, 1963. No details were given on the base except that initially it will contain cold-storage facilities for 400 metric tons of fish, with an expanded capacity to 1,500 tons by July 1964.

Observations drawn from this article are that the opening of this base will permit a considerable expansion of Poland's mid-Atlantic fishing operations. The Polish press has been advocating the promotion of a larger and more competitive Polish fishing fleet. It has stressed that if Poland's fishery production goals are to be met, new fishing grounds will have to be fished and a modern fleet built to operate in long distance waters. (United States Consulate, Poznan, January 13, 1964.)

Note: See Commercial Fisheries Review, May 1963 p. 83.

Portugal

FISHERIES TRENDS, JANUARY 1964:

The Portuguese Government ban on trawling for shellfish has been lifted in most areas, although the prohibition still applies inside a six-mile coastal zone. In addition to opening new fields to fishermen, this might lower Portuguese shellfish prices which have been higher than those in either Spain or France. (United States Embassy, Lisbon, February 1, 1964.)

* * * * *

NEW FREEZER-TRAWLERS PLANNED:

The construction of five stern trawlers equipped for freezing fish at sea is planned

Portugal (Contd.):

by Portuguese shipbuilding firms. The vessels of German design will have a length of 53 meters (174 feet) between perpendiculars. Three of the new trawlers will be built at Viana do Castelo and the other two at Mondego. State financial assistance and credit facilities have been extended for the construction of the vessels which may work in African waters off Angola.

Other vessel construction includes that of the Fisheries Society of Aveiro which is constructing two large trawlers, 80 meters (262 feet) in length, for the cod fishery in the Northwest Atlantic. (Puntal-Revista Maritima y Pesquera, October 1963.)

Rumania

ANOTHER STERN TRAWLER ORDERED FROM JAPAN:

The construction of a 3,500-ton stern trawler ordered by Rumania is expected to be completed shortly. The trawler is being built at a shipyard in Osaka, Japan. According to an earlier press report, Rumania placed orders for two similar stern trawlers with Japan, one of which was to be delivered in December 1963 and the other some time during 1964. (Minato Shimbun, January 26, 1964, and other sources.)

St. Pierre

HARBOR AND PROCESSING FACILITIES IMPROVED:

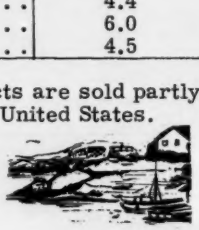
A modernization program is being conducted at the harbor of St. Pierre, a French possession located in the Northwest Atlantic south of Newfoundland. A dike will be built to protect the harbor, and a new pier will be constructed which will provide 86,000 square feet of working space. A new freezing plant, and a new fish-meal plant will be erected on the pier.

The new pier will allow the docking of vessels which have a draft of 18 feet. Traffic in the harbor declined from 1,116 vessels (488,015 gross tonnage) in 1961 to 847 vessels (346,868 gross tonnage) in 1963. Vessels stopping at the harbor are mainly fishing vessels. Many Spanish vessels call at St. Pierre.

At present, one local fishery firm (partly owned by the Government) is active at St. Pierre. It owns a small fishing fleet which is locally outfitted. The concern operates (1) a freezing plant which is able to process whole fish or fish fillets, (2) a fish meal unit for processing fish scrap, (3) a fleet of five trawlers which catch bottomfish, and (4) an ice-making plant. The firm's output in recent years has been broken down as follows:

Year	Frozen Products	Fish Meal
	.... (Million Pounds)	
1963 (9 months)	3.8	-
1962	4.4	1.3
1961	6.0	1.9
1960	4.5	1.6

Those products are sold partly to France and partly to the United States.



Sudan

SOVIET FISHERY TECHNICIANS COMPLETE SURVEY OF RED SEA WATERS:

Some 27 Soviet fishery technicians who had been surveying commercial fisheries prospects in the Sudan's Red Sea territorial waters since June 1963, completed their assignment by January 1964 when they were scheduled to return to the Soviet Union. Their report was to be submitted to the Sudanese in April 1964.

A second group of 13 Soviet fisheries specialists which arrived in Sudan in August 1963, for a survey on White Nile fisheries prospects was reported to still be in that country at the beginning of this year. (United States Embassy, Khartoum, January 19, 1964.)

Note: See Commercial Fisheries Review, September 1963 p. 98.

Sweden

WITHDRAWAL FROM INTERNATIONAL WHALING CONVENTION:

On December 18, 1963, Sweden gave notice that effective June 30, 1964, it would withdraw from the International Whaling Convention. Established in 1948, the Convention was designed to preserve the dwindling whale stocks

Sweden (Contd.):

through scientific study and regulation of catches. (The U. S. Department of State Bulletin, January 27, 1964.)

Tanganyika

FISHERY RESOURCES SURVEYED BY JAPANESE:

The marine fisheries of Tanganyika are very primitive, with fishing restricted mainly to canoe-type operations, according to a Japanese survey of the fisheries of that country. The Japan Overseas Fisheries Association (government-sponsored organization) met on January 21 at Tokyo to report on the findings of the survey group the Association sent to Tanganyika in October 1963. Thus, the burden of developing a joint fishery enterprise, as well as marketing outlets, in that country will fall almost wholly on Japan, and will require large capitalization and close guidance. In establishing a fisheries enterprise in that country, adequate assurances of protection from the governments of Japan and Tanganyika should first be obtained, according to the Association.

As for marine fishery resources off Tanganyika, the nearby waters appear to abound in such species as sea bream, barracuda, Spanish mackerel, mullet, and lobster, while the offshore waters abound in spearfish, yellowfin tuna, and albacore tuna. Also, Tanganyika has a number of good ports, which include Dar es Salaam. (Suisan Keizai Shimbun, January 22, 1964.)

U. S. S. R.

FISHERY PLANS FOR 1964:

According to an announcement in a Soviet periodical dated December 31, 1963, the Soviet Union in 1964 plans to: (1) send several motherships accompanied by 50 fishing vessels to the tuna and mackerel fishing grounds in the Arabian Sea area; (2) fish on a commercial scale for mackerel in the East China Sea by using fishing vessels equipped with large purse seines; (3) operate in the Bering Sea four large refrigerated trawlers, which will fish at depths of about 328-383 fathoms (those trawlers were reported to have left for the fishing grounds in December 1963); (4) fish with purse seines for herring in the waters off Iceland; and (5) cooperate with the fishing fleets of Poland and the German Democratic Republic (East Germany) in developing the deep-sea fishing grounds in the Northwest Atlantic Ocean. (Suisancho Nippo, January 17, 1964.)

* * * * *

CONSTRUCTION STARTED OF NINTH FACTORYSHIP:

The Soviet Union is reported to have started the construction of a very large factoryship at the Leningrad Admiralty Shipyard. That vessel will be the ninth factoryship, and the largest of its kind, to be built at that shipyard. The eighth factoryship being built at the Leningrad Shipyard is scheduled to be completed and placed in operation some time in 1964. Some

Russian king crab factoryship Andrei Zakharov.

of the other Soviet factoryships built at the Leningrad Shipyard are the Andrei Zakharov, Evengnii Nikishin, and the Aleksander Obukhov in the 15,000-ton range. (Suisancho Nippo, January 18, 1964.)

* * * * *

SOVIET VESSELS BEING BUILT IN JAPAN:

The construction of 20 fishing vessels by Japan for the Soviet Union was referred to in the Japan-U.S.S.R. Trade and Payments Agreement for 1963-1965 signed February 5, 1963, in Tokyo. By February 1964, contracts for the construction of 13 of the vessels had been reported as follows:

Five tuna vessels for the Soviet Union will be built in a shipyard at Mukaishima under a May 1963 contract. Specifications call for

U. S. S. R. (Contd.):

each vessel to have a deadweight tonnage of 2,850 tons and a price of US$3.5 million.

Eight fish factoryships for the Soviet Union will be built in a shipyard at Yokohama under a June 1963 contract. Specifications call for each vessel to have a deadweight tonnage of 10,000 tons and a price of $7.55 million.

Payment terms for the vessels were reported to be 30 percent down, with the balance payable in semiannual installments over 5½ years commencing on delivery with an annual interest rate of 4 percent.

According to the Japan-U. S. S. R. 1964 trade Protocol which was signed February 10, 1964, in Tokyo, and which revises the 1964 trade targets originally set in the basic Trade and Payments Agreement, 3 tuna motherships will be delivered to the Soviets in 1964, to be followed by 2 tuna motherships and 3 other vessels for the Soviet fishing fleet in 1965, and 5 vessels in 1966. (United States Embassy, Tokyo, February 14, 1964.)

Note: See Commercial Fisheries Review, August 1963 p. 112.

* * * * *

SOVIET INTERFERENCE WITH DANISH FISHING OPERATIONS CLAIMED:

Damage to Danish salmon fishing gear by Russian vessels has been claimed by the Director of a Copenhagen export firm which has 35 salmon cutters fishing in the Eastern Baltic Sea, according to newspaper reports. Two Russian vessels were said to have cut light buoys from Danish gear on January 30, 1964. A Danish cutter reported the registration numbers of the vessels said to be involved. A protest will be filed with the Danish Fisheries Ministry. An earlier protest by fishermen and request for diplomatic action could not be handled by the Ministry because of insufficient evidence.

The Soviet authorities are reported to require, among other things, the exact time of the alleged action, positive identification of the vessel, and its exact position. Since the Danish cutters fish as much as 25-30 kilometers (15.5-18.6 miles) of long-line gear, such evidence often is difficult to obtain.

In the past, there have been cases of compensation for gear damage by the Soviet Union, but conclusive evidence was required. In most cases submitted to the Danish Fisheries Ministry, the Danish cutters have been unable to provide such evidence. There also is a possibility that, in some instances, the Danish cutters have been close to the Soviet fishery limits. (Regional Fisheries Attache for Europe, United States Embassy, Copenhagen, February 5, 1964.)

* * * * *

SALMON FARMING IN LATVIA:

Success in rearing salmon in man-made pools and reservoirs is claimed by fishery scientists at the Tome fish-breeding plant in Latvia. They point out that an appropriate inexpensive fish feed would be needed to expand the salmon-rearing project to a commercial scale. A fish food that is close to natural feeds in chemical composition has been developed by the Baltic Fish-Breeding Research Institute in Riga. The Latvian scientists say that artificial feeding sharply reduces the time young salmon must spend in inland waters. Under natural conditions, the fry hatched in Baltic streams require 2 years to grow big enough to leave the rivers for the sea, but artificial feeding is said to reduce this period to 10 months.

Latvia plans to expand their fish-farming program by building another breeding plant on the River Salats, which empties into the Bay of Riga. (The Fishing News, January 17, 1964.)

* * * * *

SIBERIAN FRESH-WATER FISHERIES:

There is some concern among the Soviet Union's Siberian fishermen that the proposed construction of the Angara-Yenisei hydroelectric power project in Central Siberia may adversely affect fish populations in the Yenisei River which has been an abundant source for whitefish, sturgeon, and other species. To this, the Assistant Director of the Siberian Branch of the Federal Scientific Research Institute for Fisheries said the hydroelectric power project could only improve that fishery without any detriment to the resource.

Construction of the hydroelectric power plant will result in large reservoirs which will serve as fish farms. One of the reservoirs that will be formed will be about 240 miles long and cover an area of more than 500,000 acres with an average depth of 40 feet and a maximum of 115 feet. Reservoirs that

U. S. S. R. (Contd.):

will be created after construction of the dam will be favorable for fish as there will be plenty of oxygen and food. It is believed that the loss of some of the Yenisei River fish, because of their migration to tributaries, would be compensated by populating the reservoirs with other fresh-water fish including species similar to those now indigenous to the Yenisei. The "newcomers" to the reservoirs, it is anticipated, will account for 53 percent of the annual catch from the reservoirs, or about 1,800 metric tons.

To conserve the fish resource in the Yenisei until the reservoirs are filled in, it is proposed to prohibit fishing of the valuable food species for three years. The ban will cover sturgeon, graylings, and other species considered of higher value, as well as pike which are taken by seine nets.

Several species which spawn in the autumn may be unable to propagate because of decreased water levels caused by constant needs of the hydroelectric plant and decreased water supply during winter months. Those species will be cultivated on a fish farm, which will be built near the city of Abakan in the upper reaches of the Yenisei. The fish farm will raise about 160 million fry annually. Similar measures will be taken, depending on local conditions, in other reservoirs formed by the Angara-Yenisei hydroelectric power project. Those projects are expected to bring about a much greater fish production in the Yenisei and Angara by 1980. (Trade News, November-December 1963.)

United Kingdom

FISHERY LOANS
INTEREST RATES REVISED:

The British White Fish Authority announced that, as a result of changes in the rates of interest charged to them, their own rates on advances made from December 7, 1963, for fishing vessels of not more than 140 feet, and new engines, nets, and gear would be as follows: on loans for not more than five years, 5⅛ percent (increase ⅛ percent); on loans for more than 5 years but not more than 10 years, 5¼ percent (increase ⅛ percent); on loans for more than 10 years but not more than 15 years, 5¾ percent (increase ⅛ percent); and on loans for more than 15 years but not more than 20 years, 6 percent (increase ⅛ percent). (Fish Trades Gazette, December 21, 1963.)

Note: See Commercial Fisheries Review, March 1964 p. 72.

* * * * *

BRITISH INTRODUCE NEW RESERVE AUCTION FIRST SALES PRICES FOR FISH LANDINGS:

A new schedule of reserve auction prices for first sales of fresh fish landed by British trawlers in England and Wales was introduced by the British Trawlers Federation (BTF) for the year starting February 3, 1964. Although the reserve prices of various individual species have been adjusted, this is the first general revision since 1957. Reserve prices of certain species have remained unchanged since 1950.

The BTF pointed out that despite heavy increases in costs during the past seven years and the growing scarcity of fish, increases have been limited over-all to less than one-half pence (0.58 U.S. cent) a pound. The Federation said that reserve prices remain well below average costs of production and are in existence so as to limit those fluctuations in first sales prices which benefit neither the producer nor the consumer. The Federation felt that actual average prices paid are generally well above their respective reserve prices and it is unlikely that dockside prices will rise as a result of this revision by as much as one-half pence a pound, and that there is no reason for the consumer to expect any significant increase in prices at the retail level.

For the principal species such as cod and haddock, the year is divided, as in 1963, into three periods with a reserve price applied to each. But the summer period for 1964, when reserve prices are at their lowest, has been extended to the end of August. The autumn and winter period, when reserve prices are at their seasonal highest, has been shortened correspondingly. Further, the reserve prices of cod and haddock are unchanged during this period because, as occurred in 1963, small cod has its own reserve price which is well below the price of other cod. The favorable treatment accorded small cod is designed to eliminate temporary gluts and provide stocks of frozen fish in midwinter when landings are usually light.

It was explained that many of the other revisions were made because reserve prices were out of line with market conditions. An example cited was the price increase for Dover sole to 1 shilling 6-pence a pound (about 21 U.S. cents). In 1962 that species' average price was 3 shillings (42 U.S. cents), but the new reserve price is only about one-half as much. Trawler owners were of the opinion that some increase in the price of Dover sole was necessary considering the very low level to which first sales prices dropped in the first four months of 1963. They pointed out, however, that prices at retail had not dropped during that period. At that time, unusually good weather increased landings by 155 percent but only 36 percent more money was received for the fish. To prevent uneconomic fluctuations of that type, reserve prices of other principal species have been brought up to date.

In announcing the increase in reserve prices, the Federation's president said that it was very difficult to wholly offset the effects of rising costs, lower landings, and a system of fish marketing which permits a degree of price fluctuation that is detrimental to the fish producers and is, at best, of no benefit to consumers. It was pointed out that evidence of the plight of the British trawling industry is the fact that arrears on repayments of loans from the White Fish Authority now amount to £1.3 million (US$3.6 million). He added that "In the circumstances, therefore, the in-

United Kingdom (Contd.):

creases in reserve prices are modest. It cannot be pretended that they alone will put the industry right, but they should bring about a more realistic structure of fish prices and also bring these into a better relationship with costs..." (Fishing News, January 10, 1964.)

* * * * *

NEW FREEZER-TRAWLER LAUNCHED:

The Ross Valiant, a new stern trawler designed to freeze fish at sea, was launched at Selby, England, on January 30, 1964. The vessel, which is scheduled for completion in July 1964, is the first of two similar freezer-trawlers ordered by a large British fishing company. The Ross Valiant will be able to store 400 tons of frozen fish at -20° F. Before being placed in cold storage, fish will be gutted, washed, and then frozen (as whole fish) in 100-pound blocks. (A special thawing unit for the fish blocks was recently installed by the owner of the Ross Valiant at a filleting plant onshore.) The Ross Valiant carries 10 plate freezers with a combined daily freezing capacity of 35 tons.

Launching of the new freezer-trawler Ross Valiant at Selby, England.

The dimensions of the vessel are: length over-all 226'6", length between perpendiculars 190'0"; moulded breadth 36'6"; moulded depth at main deck 17'0"; depth at upper deck 24'6".

The vessel is driven by a Diesel-electric power system. Diesel power is provided by three 8-cylinder pressure-charged and intercooled engines. Each engine develops 1,135 b.hp., at 1,000 r.p.m. and drives a 445 kw., d.c. generator; 200 kw. (250 kVA) alternators are flexibly coupled in tandem to each generator. Intercoupled on the constant current loop system, the three generators provide power for two 825-b.hp. propulsion motors which, running at 1,000 r.p.m., provide a propeller shaft speed of 175 r.p.m. (maximum) through a reduction gearbox.

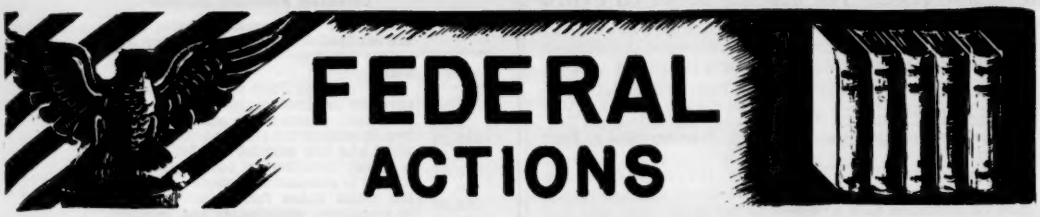
The vessel is equipped with an electric trawl winch, having two main drums, each with a capacity of 1,500 fathoms of $3\frac{1}{8}$" circ. warp, and two warping drums, each with a capacity of 150 fathoms of $2\frac{7}{8}$" circ. warp. Power is provided by a winch motor developing 300 b.hp. at 650 r.p.m.

The owner of the Ross Valiant is one of Britain's largest integrated fishing companies. The Ross Valiant was the 39th trawler launched at Selby for the company since 1955 and the 6th distant-water vessel within the last $2\frac{1}{2}$ years.

* * * * *

BRITISH FREEZING EQUIPMENT ORDERED FOR KOREAN FISH-FACTORYSHIP:

A British firm in early 1964 was scheduled to supply 28 vertical-plate freezers for a fish-factoryship (7,000 deadweight tons) under construction in Holland for Korean interests. The order will provide the vessel with a freezing capacity of 100 tons of whole-fish blocks every 24 hours. (Press release, Ross group, Grimsby, January 24, 1964.)



Department of Commerce

BUREAU OF THE CENSUS

ECONOMIC CENSUS OF COMMERCIAL FISHING INDUSTRY PLANNED:

A census covering the economic status of the commercial fishing industry in 1963 is planned by the Bureau of the Census of the U. S. Department of Commerce. Collection plans and questionnaires are being developed in close cooperation with the Bureau of Commercial Fisheries of the U. S. Department of the Interior.

A census of commercial fisheries was last conducted by the U. S. Bureau of the Census in 1908. Since that time, commercial fishery statistics have been compiled mainly by the Fish and Wildlife Service of the Department of the Interior and its predecessor, the Bureau of Fisheries of the Department of Commerce. Annual statistical digests are published by the Fish and Wildlife Service.

Tentative plans for the 1963 economic census include the collection of data on number and location of commercial fishing establishments, number of employees by months, annual payroll, receipts for landed catch, other business receipts, and number of boats and vessels by size. Mailing lists will be assembled with the cooperation of the Social Security Administration and the Internal Revenue Service.

The mail canvass, which will cover establishments with one or more employees, will be supplemented by a 50-percent sample of income tax returns for commercial fishermen with no employees. The "no employee" group is believed to account for a substantial portion of the annual value of fishery products.

The basic reporting unit in an economic census is the establishment as defined in the 1957 Standard Industrial Classification Manual of the Bureau of the Census. The mobility of commercial fishing operations suggests that problems may be encountered in defining establishments, particularly for multiple-operation companies. It is anticipated that a discussion of such problems with representative companies, as well as a protest of the data items, will be among the necessary steps preliminary to the actual canvass. (Statistical Reporter, Bureau of the Budget, February 1964.)

Department of Health, Education, and Welfare

FOOD AND DRUG ADMINISTRATION

AMENDMENT REQUESTED IN STANDARD OF IDENTITY FOR CANNED TUNA:

Notice was given in the Federal Register, February 6, 1964, that a petition has been filed with the U. S. Food and Drug Administration proposing that the standard of identity for canned tuna (21 CFR 37.1) be amended to list sodium acid pyrophosphate in a quantity not to exceed 0.15-gram per ounce net weight of the canned tuna as an optional ingredient for inhibiting the development of struvite crystals in the food. The petition proposes that the paragraph of the standard in which optional ingredients are designated for label declaration be amended to provide that when sodium acid pyrophosphate is added the label shall bear the statement "pyrophosphate added" or "with added pyrophosphate."

All interested persons were invited to submit their views in writing regarding the proposal by March 7, 1964.

* * * * *

PUBLIC HEARING ON STANDARDS OF IDENTITY FOR FROZEN RAW BREADED SHRIMP:

As previously announced, a public hearing on proposed standards for "frozen raw breaded shrimp" and "frozen raw lightly breaded shrimp" was held by the U. S. Food and Drug

Administration. The hearing began on February 17, 1964, in Washington, D. C.

Persons having expert knowledge of what consumers may expect in commercial breaded shrimp products were urged to participate.

Note: See Commercial Fisheries Review, February 1964 p. 88.

Interstate Commerce Commission

CHARGE FOR LESS-THAN-CARLOAD SHIPMENTS APPROVED:

The U. S. Interstate Commerce Commission voted not to suspend or investigate the railway express tariffs providing for an additional charge of 25 cents per shipment on all less-than-carload shipments of one or more packages. The increase became effective January 27, 1964. (National Fisheries Institute Flashes, February 7, 1964.)

Small Business Administration

ASSISTANCE FOR ECONOMIC INJURY SUFFERED BY GREAT LAKES FISHERY FIRMS:

Notice (Declaration No. 1) was published in the Federal Register (page 2713), February 26, 1964, that the U. S. Small Business Administration will receive applications for disaster assistance from small business concerns which have suffered substantial economic injury as a result of the drastic reduction in consumption of smoked fishery products from the Great Lakes area.

Financial assistance, if found to be necessary or appropriate, will be extended to small business concerns determined by the Small Business Administration to have suffered substantial economic injury. No applications under this Declaration shall be accepted subsequent to August 31, 1964.

The notice as it appeared in the Federal Register follows:

SMALL BUSINESS ADMINISTRATION

[Declaration No. 1]

SMOKED FISH FROM GREAT LAKES AREA

Diseased Products Disaster

Whereas, many small business firms are engaged in catching, processing and selling fish from the Great Lakes area; and

Whereas, the Food and Drug Administration on October 25, 1963, issued a statement warning the public of botulism in smoked fish from the Great Lakes area; and this warning was followed by a drastic reduction in consumption resulting in substantial economic injury to the Great Lakes fishing industry and to processors, distributors and retailers of smoked fish from the Great Lakes area; and

Whereas, the cause of the botulism was not known;

Now, therefore, as Administrator of the Small Business Administration, I hereby declare that the foregoing circumstances constitute a disaster within the meaning of section 7(b)(4) (Pub. Law 88-264) of the Small Business Act, as amended. Applications for disaster assistance will be received from small business concerns which have suffered substantial economic injury as a result thereof. Financial assistance, if found to be necessary or appropriate, will be extended to small business concerns determined by Small Business Administration to have suffered substantial economic injury as a result of this disaster. No applications under this Declaration shall be accepted subsequent to August 31, 1964.

EUGENE P. FOLEY,
Administrator.

FEBRUARY 6, 1964.

Department of the Treasury

BUREAU OF CUSTOMS

GROUNDFISH FILLET IMPORT TARIFF-RATE QUOTA FOR 1964:

The reduced-tariff-rate import quota on fresh and frozen groundfish (cod, haddock, hake, pollock, cusk, and ocean perch) fillets and steaks for calendar year 1964 is 24,861,670 pounds, the Bureau of Customs announced in the February 6, 1964, Federal Register. Divided into quarterly quotas this means that 6,215,418 pounds of groundfish fillets and steaks during each quarter of 1964 may be imported at the 1-7/8 cents-per-pound rate of duty and any imports over the quarterly quota will be dutiable at the rate of 2-1/2 cents a pound.

The reduced-rate import quota for 1964 is 0.3 percent less than the 1963 quota of 24,874,871 pounds. From 1951 to 1960 the quantity of fresh and frozen groundfish fillets permitted to enter the United States at the reduced rate of duty of 1-7/8 cents a pound had increased 24.7 percent, but in 1961 the trend was reversed significantly for the first time because in 1960 frozen fish fillet blocks with bits and pieces were no longer dutiable under the Tariff category of "frozen groundfish fillets." A further decline took place in 1963 and in 1964 the quota is only slightly lower than the previous year.

Average aggregate apparent annual consumption in the United States of fresh and frozen groundfish fillets and steaks (including the fillet blocks and slabs used in the man-

Reduced-Tariff-Rate Import Quota for Fresh and Frozen Groundfish Fillets, 1954-1964	
Year	Quota
	1,000 Lbs.
1964	24,862
1963	24,875
1962	28,571
1961	32,601
1960	36,533
1959	36,920
1958	35,892
1957	37,376
1956	35,197
1955	35,433
1954	33,950

ufacture of fish sticks, but excluding fish blocks since September 15, 1959, and blocks of fish bits) for the three years (1961-63) preceding 1964 was 165,744,467 pounds, calculated in accordance with headnote 1, Part 3A, Schedule 1, under item 110.50, of the Tariff Schedules of the United States. This was far below the consumption of 217,337,633 pounds in 1958-60 and 243,554,480 pounds for 1957-59.

* * * * *

IMPORTS OF "HERRING SALAD" DUTIABLE AT 20 PERCENT AD VALOREM:

"Herring salad"--a product consisting of pickled herring, mayonnaise, pickles, carrots, onions, celery, and peas--has been classified by the U. S. Bureau of Customs under the provision for "Edible preparations, not specially provided for. . . : Other (dutiable at 20 percent ad valorem), item 182.91, Tariff Schedules of the United States. The decision was contained in a Bureau of Customs letter dated December 26, 1963. (Treasury Decisions, vol. 99, no. 3, January 16, 1964.)

Eighty-Eighth Congress

(Second Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, refferal to committees, pertinent legislative actions by the House and Senate, as well as signature into law or other final disposition are covered.

COMMERCIAL FISHERIES FUND: On March 3-4, 1964, the Subcommittee on Fisheries and Wildlife of the House Committee on Merchant Marine and Fisheries held a hearing on S. 627, and related bills, to promote State commercial fisheries research and development projects. Testimony was received from Senator Hart; Congressman Rivers of Alaska; Congressman St. Onge; Congressman Bennett; the Director of the Bureau of Commercial Fisheries; and public witnesses. The statement presented to the Subcommittee on H. R. 7710 (identical to S. 627) by Congressman St. Onge was inserted by him in the Congressional Record (Appendix pages A1112-1113), Mar. 4, 1964. The statement by Congressman Bennett describing the Great Lakes fisheries and their need for assistance was inserted by him in the Congressional Record (Appendix pages A1139-1140), March 5, 1964.

On March 16, 1964, the House received a memorial of the Legislature of the State of Alaska, memorializing the President and the Congress of the United States to take favorable action on S. 627.

CONSERVATION OF MARINE FISHERIES RESOURCES: The House Committee on Merchant Marine and Fisheries held hearings on February 20, 25, and 26, 1964, on S. 1988, and related bills, to prohibit fishing in the territorial waters of the United States and in certain other areas by persons other than nationals or inhabitants of the United States. Testimony was received from Congressman Rivers of Alaska; the Special Assistant for Fisheries and Wildlife of the Department of State; the Director of the Bureau of Commercial Fisheries; the Commandant of the Coast Guard; and public witnesses.

Also introduced in the House were H. R. 10028 (Wilson) on Feb. 19, 1964 and H. R. 10040 (Hagen) on Feb. 20, 1964; both similar to S. 1988; referred to the Committee on Merchant Marine and Fisheries. A statement by Congressman Wilson discussing the need for such legislation appeared in the Feb. 19, 1964, Congressional Record (page 3053).

Senator Gruening inserted in the Feb. 25, 1964, Congressional Record (pages 3340-3342), a statement by Senator Bartlett before the House Committee on Merchant Marine and Fisheries on Feb. 19, 1964, concerning the need for S. 1988. In the statement, Senator Bartlett also supported the establishment of a 12-mile fisheries limit.

The Senate Committee on Commerce met in executive session on March 3, 1964, to discuss certain problems relating to the Continental Shelf and territorial sea with officials of the Department of State, the Coast Guard, and the Bureau of Commercial Fisheries, Department of the Interior.

FISHERMEN'S FINANCIAL AID FOR ECONOMIC DISLOCATION: H. R. 10087 (Cederberg) introduced in House Feb. 25, 1964, to authorize the Secretary of the Interior to make payments to reestablish the purchasing power of American fishermen suffering temporary economic dislocation; referred to the Committee on Merchant Marine and Fisheries.

FISHERY CONSERVATION IN ALASKA: On March 12, 1964, Senator Gruening inserted in the Congressional Record (pages 4873-4874), a resolution of the Alaska State Legislature, relating to the fishery conservation and propagation contributions of the U. S. Army in Alaska.

FOOD-FOR-PEACE, AND FISH: On February 27, 1964, the Subcommittee on Foreign Agricultural Opera-

tions of the House Committee on Agriculture held a hearing on the implementation of the amendment made to the Mutual Security Act (P. L. 88-205) which makes fish eligible for export under P. L. 480 (83d Cong.) Testimony was received from Congressmen Tupper and McIntire; and public witnesses.

IMPORT COMMODITY LABELING: On March 4, 1964, during Senate consideration of H. R. 6196, a bill to encourage increased cotton consumption, maintain income of cotton producers, and provide research programs to lower production costs, Senator Miller submitted an amendment (No. 463) to the bill and stated, "this amendment is designed to require the labeling of imported meat, poultry, and fish, or any products therefrom, so that the purchaser, whether the wholesaler or the consumer, will know that such items have been imported into the United States or have not been produced in the United States." (Congressional Record, page 4217, Mar. 4, 1964.) On March 6, 1964, by a vote of 34 yeas to 55 nays, the Senate rejected Senator Miller's Amendment (as modified by acceptance of Senator Magnuson's Amendment thereto to include imported lumber).

INDIAN FISHING RIGHTS: On March 3, 1964, Congressman Westland addressed the House on the subject of Indian fishing rights in Washington State (Congressional Record, page 4078).

INTERIOR APPROPRIATIONS FY 1965· Department of the Interior and Related Agencies Appropriations for 1965 (Hearings before a Subcommittee of the Committee on Appropriations, House of Representatives, 88th Congress, 2nd Session), 1744 pp., printed. Contains hearings held on Department of the Interior programs and budget estimates for fiscal year 1965.

On March 13, 1964, the House Committee on Appropriations met in executive session and ordered reported favorably to the House without amendment H. R. 10433, a bill making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1965, and for other purposes. Included are funds for the Fish and Wildlife Service, its two bureaus--Commercial Fisheries and Sport Fisheries and Wildlife--and the Office of the Commissioner.

H. Rept. 1237, Department of the Interior and Related Agencies Appropriation Bill, 1965 (March 13, 1964, report from the Committee on Appropriations, House of Representatives, 88th Congress, 2nd Session, to accompany H. R. 10433), 45 pp., printed. The Committee recommended $73,021,600 for the Fish and Wildlife Service for FY 1965, compared with budget estimates for FY 1965 of $74,524,000 and 1964 appropriations of $71,564,300. The Bureau of Commercial Fisheries portion for FY 1965 is $23,587,900 (against 1965 budget estimates of $26,495,000 and 1964 appropriations of $23,985,900); the Bureau of Sport Fisheries and Wildlife portion for FY 1965 is $49,008,700 (against 1965 budget estimates of $47,636,000 and 1964 appropriations of $47,192,400); and the amount for the Office of the Commissioner in FY 1965 is $425,000 (against 1965 budget estimates of $393,000 and 1964 appropriations of $386,000).

The House by a voice vote on March 17, 1964, passed H. R. 10433.

On Feb. 27, 1964, the Senate Committee on Appropriations continued hearings on fiscal 1965 budget estimates for the Department of the Interior, and related agencies, receiving testimony from the Commissioner of the Fish and Wildlife Service, the Director of the Bureau of Commercial Fisheries, and the Director of the Bureau of Sport Fisheries and Wildlife.

OCEANOGRAPHIC RESEARCH VESSEL INSPECTION: S. 2552 (Magnuson) introduced in Senate Feb. 26, 1964, to exempt oceanographic research vessels from the application of certain vessel inspection laws, and for other purposes; referred to the Committee on Commerce. Introducing the bill, Senator Magnuson spoke from the floor of the Senate (Congressional Record, page 3589, Feb. 26, 1964) stating that the bill had been prepared after consultation with the Coast Guard, and after extensive discussions with members of the Research Vessel Operators Council, representing oceanographic institutions operating oceangoing vessels. Excerpts from a statement prepared by the Council in justification of the proposed legislation were quoted by Senator Magnuson, in part, as follows: ". . . At the present time research vessels, other than those operated as public vessels, are inspected and certificated by the Coast Guard under regulations established for merchant cargo and passenger vessels... . The fact that research vessels are considered within the scope of merchant vessels results in a situation which is complicated and confusing... . The mission of a research vessel is neither military nor commercial, but it is a special service which requires separate rules and regulations if the vessel is to be the effective instrument demanded by the substantial national investment in the marine sciences." Senator Magnuson emphasized that the bill was not intended to alter safety regulations.

H. R. 10441 (Keith) introduced in House March 16, 1964, similar to S. 2552; referred to the Committee on Merchant Marine and Fisheries.

OCEANOGRAPHY: Senator Bartlett spoke from the floor of the Senate on Feb. 21, 1964, describing oceanographic work of the U. S. Coast Guard Cutter Northwind in the fall of 1963 during a cruise which extended into the East Siberian Sea and the Laptev Sea (Congressional Record, page 3202, Feb. 21, 1964).

Two newspaper articles describing some of the potential benefits from oceanographic research were inserted by Congressman King in the March 3, 1964, Congressional Record (Appendix pages A1057-1058).

A paper titled "Oceanic Research and Public Policy" delivered to the Governor's conference on "California and the World Oceans" in Los Angeles, Calif., Jan. 31, 1964, by a technical assistant to the Director, Office of Science and Technology, Office of the President, was inserted by Congressman Miller in the March 5, 1964, Congressional Record (Appendix pages A1132-1136). Included is a statement of the national oceanographic plan budget by actual Federal expenditures (by Agency) in fiscal year 1963, estimated expenditures in fiscal year 1964, and proposed expenditures in the President's budget for fiscal year 1965.

A newspaper article discussing some of the benefits which may be gained by oceanographic research was inserted by Congressman Wilson in the March 17, 1964 Congressional Record (Appendix page A1379).

PACIFIC ISLANDS TRUST TERRITORY DEVELOPMENT: The Subcommittee on Territories and Insular Affairs of the Senate Committee on Interior and Insular Affairs held hearings Feb. 28, 1964, on H. R. 3198, to promote the economic and social development of the

Trust Territory of the Pacific Islands, and for other purposes. The hearings were adjourned subject to call.

PASSAMAQUODDY TIDAL POWER PROJECT: H. R. 10179 (McIntire) and H. R. 10180 (Tupper) introduced in House Feb. 27, 1964, to authorize the international Passamaquoddy tidal power project, including hydroelectric power development of the upper Saint John River, and for other purposes; referred to Committee on Foreign Affairs.

PESTICIDES: Interagency Coordination in Environmental Hazards (Pesticides) (Hearings before the Subcommittee on Reorganization and International Organizations of the Committee on Government Operations, United States Senate, 88th Congress, 1st Session), Part 1, 390 pp., printed. Contains hearings held May 16, 22, 23 and June 4, 25, 1963, pursuant to S. Res. 27, 88th Congress, as amended. Included are statements from Federal officials, chemical industry representatives, and other public witnesses. The exhibits introduced at the hearings included several references to the effects of pesticides on fishery resources.

POLLUTION OF SEA BY OIL TREATY AMENDMENTS On Feb. 21, 1964, the Senate received Ex. Rept. No. 6, a favorable report from the Committee on Foreign Relations, on Executive C (88th Congress, 1st Session), Amendments of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, adopted by a Conference of Contracting Governments convened at London on April 11, 1962.

On Feb. 25, 1964, Executive C. was read for the second time in the Senate (Congressional Record, pages 3352-3354) and ratified by a unanimous vote of 88 yeas. No House action required.

PRICE-QUALITY STABILIZATION: On Feb. 19, 1964, the Subcomittee on Quality Stabilization of the Senate Committee on Commerce concluded its hearings on S. 774, to amend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution, and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes. On March 11, 1964, the bill was favorably reported, with amendment, to the full Committee by the Subcommittee on Quality Stabilization.

RESEARCH PROGRAMS: H. Rept. No. 1143, Federal Research and Development Programs (Feb. 17, 1964, First Progress Report of the Select Committee on Government Research, House of Representatives, 88th Congress, 2nd Session), 19 pp., printed. Contains (1) an overview of research and development; (2) summary of activities and investigative resources; (3) areas of committee inquiry (administration of research and development projects; facilities for research and development; fiscal and contractual policies and procedures; impact of government research, student assistance in higher education; interagency coordination of research and development projects; statistical review of government research and development; documentation, dissemination, and use of research and development results; manpower for research and development; and national goals and policies); (4) preliminary research and development checklist; and appendix.

TRANSPORTATION AMENDMENTS OF 1963: Transportation Act Amendments--1963 (Hearings before the Surface Transportation Subcommittee of the Committee on Commerce, United States Senate, 88th Congress, 1st Session), Part 1 and Part 2, 1079 pp., printed. Contains hearings held on various dates in May, June, September, and October 1963, on S. 1061, a bill to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes; and on S. 1062, a bill to provide for strengthening and improving the national transportation system, and for other purposes. Included are a letter from the President of the United States transmitting the proposed legislation; text of the proposed legislation and proposed amendments; Federal agency comments on the proposed legislation; and statements from other interested parties.

TRANSPORTATION AMENDMENTS OF 1964: H. Rept. No. 1144, Transportation Amendments of 1964 (February 18, 1964, report of the Committee on Interstate and Foreign Commerce, House of Representatives, 88th Congress, 2nd Session), 107 pp., printed. The Committee reported favorably H. R. 9903, to amend the Interstate Commerce Act and the Federal Aviation Act of 1958 so as to strengthen and improve the national transportation policy, and recommended passage of the bill. Contains purpose of the bill, what the bill does, background and need for legislation, section-by-section analysis, Presidential documents, changes in existing law, departmental reports, and the supplemental views of Representative Staggers dissenting in part with the Committee report.

WATER POLLUTION CONTROL ADMINISTRATION: On Feb. 19, 1964, the House Committee on Public Works concluded hearings on H. R. 3166, 9963, 4571, S. 649, and H. R. 6844, and related bills, to amend the Federal Water Pollution Control Act. Testimony was received from Congressmen and public witnesses. Speaking from the floor of the Senate on March 5, 1964, Senator Muskie reviewed the activities of the Advisory Commission on Intergovernmental Relations since its establishment in 1959, and announced that the Commission had filed its fifth annual report (Congressional Record, pages 4313-4315). Senator Muskie's remarks included a reference to a Commission report in 1962 which recommended some of the provisions incorporated in S. 649, a bill to establish in the Department of Health, Education, and Welfare, a Federal Water Pollution Control Administration, and for other purposes.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON, D. C. 20240. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
FL - FISHERY LEAFLETS.
MNL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
SSR.- FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).

Number Title

CFS-3356 - Wisconsin Landings, September 1963, 2 pp.
CFS-3362 - California Landings, August 1963, 4 pp.
CFS-3369 - Virginia Landings, September 1963, 4 pp.
CFS-3370 - Frozen Fishery Products, November 1963, 8 pp.
CFS-3381 - California Landings, September 1963, 4 pp.
CFS-3383 - Gulf Coast Shrimp Data, August 1963, 21 pp.
CFS-3385 - Ohio Landings, September 1963, 3 pp.
CFS-3386 - Virginia Landings, October 1963, 4 pp.
CFS-3387 - Massachusetts Landings, June 1963, 10 pp.
CFS-3388 - Maryland Landings, October 1963, 4 pp.
CFS-3391 - Georgia Landings, November 1963, 3 pp.
CFS-3392 - New Jersey Landings, October 1963, 4 pp.
CFS-3393 - Fish Meal and Oil, November 1963, 2 pp.
CFS-3394 - Florida Landings, November 1963, 8 pp.
CFS-3395 - Frozen Fishery Products, December 1963, 8 pp.
CFS-3396 - Rhode Island Landings, October 1963, 4 pp.
CFS-3397 - South Carolina Landings, November 1963, 3 pp.
CFS-3398 - Michigan Landings, October 1963, 3 pp.
CFS-3399 - Wisconsin Landings, November 1963, 2 pp.
CFS-3400 - Fish Sticks and Fish Portions, October-December 1963, 2 pp.
CFS-3401 - Louisiana Landings, November 1963, 3 pp.
CFS-3402 - New York Landings, November 1963, 4 pp.
CFS-3403 - Virginia Landings, November 1963, 4 pp.
CFS-3404 - Maryland Landings, November 1963, 4 pp.
CFS-3405 - California Landings, October 1963, 4 pp.
CFS-3406 - Maine Landings, November 1963, 4 pp.
CFS-3410 - Georgia Landings, December 1963, 3 pp.
CFS-3411 - South Carolina Landings, December 1963, 3 pp.
CFS-3413 - Florida Landings, December 1963, 8 pp.
CFS-3418 - Alabama Landings, November 1963, 4 pp.
CFS-3419 - Rhode Island Landings, November 1963, 3 pp.
CFS-3422 - Ohio Landings, October 1963, 3 pp.
CFS-3427 - Wisconsin Landings, December 1963, 2 pp.

Sep. No. 701 - Gulf of Alaska Scallop Explorations--1963

FL-551 - Shrimp Farming, by Donald M. Allen, 8 pp., illus., October 1963. Gives an account of shrimp culture as it is practiced in Southeast Asia and suggesting possible application of techniques developed there to shrimp farming in the United States. Contains sections on the general life history of shrimp, culture methods, recommendations, and conclusions. In the United States, natural populations of shrimp occur in estuaries along the Gulf and South Atlantic coasts. This region appears well suited for shrimp farming, but commercial ventures in this field have been unsuccessful. If shrimp culture problems relating to seed supply, growth, survival, and harvesting can be resolved, and proven methods followed closely, Gulf and South Atlantic coastal marshes may support a new industry, states the author.

SSR-Fish. No. 443 - Progress Report Spring Chinook Salmon Transplantation Study 1955-61, by Paul D. Zimmer, Roy J. Wahle, and Eugene M. Malzeff, 27 pp., illus., November 1963.

SSR-Fish. No. 451 - A Method for Tagging Immature Herring, by John E. Watson, 10 pp., illus., August 1963.

SSR-Fish. No. 457 - Physical Oceanographic Studies of Narragansett Bay, 1957 and 1958, by Steacy D. Hicks, 34 pp., illus., September 1963.

SSR-Fish. No. 460 - Natural Variation in Spotting, Hyoid Teeth Counts, and Coloration of Yellowstone Cutthroat Trout, Salmo clarki lewisi Girard, by Ross V. Bulkley, 14 pp., illus., July 1963.

SSR-Fish. No. 462 - Mycobacteria in Adult Salmonid Fishes Returning to National Fish Hatcheries in Washington, Oregon, and California in 1958-59, by A. John Ross, 7 pp., July 1963.

Fishery Bulletin of the Fish and Wildlife Service, vol. 63, no. 1, 1963, 258 pp., illus., printed. Contains the following articles, which are also available as reprints: "Identification of New England Yellowtail Flounder Groups," by Fred E. Lux; "Comparison of Growth of Four Strains of Oysters Raised in Taylors Pond, Chatham, Mass.," by William N. Shaw and James A McCann; "Herring Tagging Experiments in Southeastern Alaska," by Bernard Einar Skud; "Model of the Migration of Albacore in the

North Pacific Ocean," by Tamio Otsu and Richard N. Uchida; "Further Studies on Fishway Slope and Its Effect on Rate of Passage of Salmonids," by Joseph R. Gauley and Clark S. Thompson; "Age, Growth, and Maturity of Round Whitefish of the Apostle Islands and Isle Royale Regions, Lake Superior," by Merryll M. Bailey; "Age and Growth of the Whitefish in Lake Superior," by William R. Dryer; "Influence of Water Velocity upon Orientation and Performance of Adult Migrating Salmonids," by Charles R. Weaver; "Development of a Mathematical Relationship between Electric-Field Parameters and the Electrical Characteristics of Fish," by Gerald E. Monan and Derek E. Engstrom; "Use of Plant Hemagglutinins in Serological Studies of Clupeoid Fishes," by Carl Sindermann; "Some Aspects of the Oceanography of Little Port Walter Estuary, Baranof Island, Alaska," by Charles F. Powers; "Early Larval Stages of the Seabob, Xiphopeneus kroyeri (Heller)," by William C. Renfro and Harry L. Cook; "Abundance, Age, and Fecundity of Shad, York River, Va., 1953-59," by Paul R. Nichols and William H. Massmann; "Cod Groups in the New England Area," by John P. Wise; "Distinguishing Tuna Species by Immunochemical Methods," by George J. Ridgway; "Theory on Development Mounds Near Red Bluff, Calif.," by Harold A. Gangmark and F. Bruce Sanford; and "Effect of Fishway Slope on Performance and Biochemistry of Salmonids," by Gerald B. Collins and others.

Operations of the Bureau of Commercial Fisheries under the Saltonstall-Kennedy Act, Fiscal Year 1962, 87 pp., illus., processed, August 1963. The eighth annual report to the Congress of the activities of the U. S. Bureau of Commercial Fisheries during the fiscal year ending June 30, 1962, under the provisions of the Saltonstall-Kennedy Act of July 1, 1954. Discusses commercial fishery progress in nationwide or international programs in technology, market news reporting, statistical reporting, marketing, foreign trade, and economics. In the Pacific Region, emphasis was placed on salmon and halibut abstention studies, the growing king crab fishery, biological studies of sockeye salmon, the salmon vs. dam controversy, grade standard development for sole and flounder fillets, bacteriological survey of Pacific filleting plants, and quality studies of Dungeness crab. The Gulf and South Atlantic Region reported a striped bass research program; menhaden research activities in sampling commercial catches for biostatistical and population analyses; research in shrimp biology, fishing gear and behavior; production of a shrimp trawling film; development of shrimp standards; shrimp quality studies; oyster and oyster drill studies; and calico scallop population studies. In the North Atlantic Region, activity centered around the Atlantic Herring Program encompassing early life history studies, age and growth studies, inshore habitat, herring migrations, disease research, development of blood group systems, and statistics of the catch. Other activities included Gulf of Maine temperature studies, ocean perch tagging, sea scallop stocks investigations, haddock and cod yield studies, research designed to improve trawling gear and methods, an effective oyster drill control program, oyster cultch studies, research on fish protein concentrate, school lunch and institutions programs, vessel safety activities, and participation in the FAO Fish in Nutrition Conference. Great Lakes and Central Region programs included Lake Erie biological research, limnology studies, Green Bay-Saginaw Bay fish stocks research, technical assistance to trawl fisheries, technological work on thiaminase, technical advice on refrigeration and smoking techniques, establishment of the National Marketing Services Offices in Chicago, mink feed studies, and economic studies. Alaska Region activities emphasized sockeye salmon studies in Bristol Bay, Kvichak River, Nushagak River, Karluk Lake, and Kitoi Research Station; pink salmon studies at Little Port Walter and Olsen Bay; salmon streams and logging research; Southeast salmon stream catalog; Kasitsna Bay king crab studies; and research on crab meat production. In the California area, work went forward on sea surface temperature charts; sardine research in subpopulations, physiology, behavior, life history, and taxonomy; oceanographic and tuna contract research; tuna fishing strategy study; canned tuna specifications; and albacore catch analysis. There were no programs financed by S-K funds in the Hawaii Area during fiscal year 1962.

A Preview of the National Fisheries Center and Aquarium, 10 pp., illus., printed, 1963. Authorized by Act of Congress late in 1962, the Center is expected to be completed by about 1967. The $10 million construction cost plus the annual costs of operating the Center will be recovered by admission fees. Research opportunities for scientists will be available in genetics, reproduction, nutrition studies, fish diseases, experimental ecology, behavior of aquatic organisms, antibiotics produced by marine animals, and other fishery problems. Fish will be displayed in pools and tanks. Movies and lectures on a variety of fishery subjects will be presented in the Center's auditorium.

Program of Research and Services for Alaska's Commercial Fisheries, Circular 171, 25 pp., illus., printed, October 1963. Discusses the Federal role in Alaska's fisheries, past and present; history of commercial fishing in Alaska; immediate problems--the international treaties situation, the declining salmon runs, the need for information, and the need for diversification of fishing effort; and forseeable future problems--expansion of foreign fisheries, and human disturbance of salmon-spawning grounds. Outlines Bureau activities in Alaska in: biological research--knowledge of the environment, population dynamics, racial studies, and special studies of the effects of logging and other activities on fisheries; technological research; river basin studies; exploratory fishing and gear research; resource management; loans and grants; and statistics. Also covers planned future Bureau activities in marketing economics, information and education, and market news service; the tools to do the job; and what the Bureau's Alaska program will yield.

Your Recreation and the Fish and Wildlife Service, 8 pp., illus.

THE FOLLOWING ENGLISH TRANSLATION OF A FOREIGN LANGUAGE ARTICLE IS AVAILABLE ONLY FROM THE U. S. BUREAU OF COMMERCIAL FISHERIES BIOLOGICAL LABORATORY, BOX 3830, HONOLULU, HAWAII, 96812.

On the Oceanographic Conditions in the Southwestern Region of the Okhotsk Sea (2), by Makoto Wakao and Iori Kojima, 14 pp., illus., processed, November 1963. (Translated from the Japanese, Scientific Reports of the Hokkaido Fisheries Experimental Station, no. 1, March 1963, pp. 1-12.)

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE FISHERY MARKET NEWS SERVICE, U. S. BUREAU OF COMMERCIAL FISHERIES, WYATT BLDG., SUITE 611, 777 14TH ST. NW., WASHINGTON, D. C. 20005.

Number Title

MNL - 23 - Fisheries of Chile. Part I--North Chile, 1960-62 and Jan.-Sept. 1963, 52 pp.

MNL - 52 - Menhaden Fish Oil Prices--New York City, 1953-1963 and January 1964, 5 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

(Baltimore) Monthly Summary--Fishery Products, October 1963, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore, Md. 23369.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, January 1964, 13 pp. (Market News Service U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif. 90731.) California cannery receipts of tuna and tunalike fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

California Fishery Market News Monthly Summary, Part II - Fishing Information January 1964, 8 pp., illus. (U. S. Bureau of Commercial Fisheries, Biological Laboratory, P. O. Box 6121, Pt. Loma Station, San Diego, Calif. 92100.) Contains sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, January 1964, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, U. S. Customs House, 610 S. Canal St., Rm. 1014, Chicago, Ill. 60607.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, January 1964, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans, La. 70130.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; Gulf menhaden landings and production of meal, solubles, and oil; and sponge sales; for the month indicated.

List of Primary Receivers of Imported Fishery Products and Byproducts at New York, 1963, 22 pp., processed, January 1964. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.)

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, January 1964, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va. 23369.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

New England Fisheries--Monthly Summary, December 1963, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston, Mass. 02210.) Review of the principal New England fishery port. Presents data on fishery landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses, fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith) and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and Boston Fish Pier and Atlantic Avenue fishery landings and ex-vessel prices by species; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--December 1963, 20 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York, N. Y. 10038.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and freshwater sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

Progress Report on Chemical Methods of Control of Molluscan Enemies, 20 pp., vol. 24, Bulletin No. 8, processed, November 1960. (U.S. Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.)

Report of Columbia River Fishery Program Office, Fiscal Years 1959-1960, 21 pp., illus., processed, 1961. U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, Portland, Oreg.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, January 1964, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle, Wash. 98104.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges;

landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl vessels as reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

Use of Chemical Barriers to Protect Shellfish Beds from Predators, by V. L. Loosanoff, C. L. MacKenzie, Jr. and L. W. Shearer, 11 pp., vol. 23, Bulletin no. 6, processed, 1959. (U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Commercial Fisheries, Biological Laboratory, Milford, Conn.)

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402.

"Artifical Light to Attract Young Perch: A New Method of Augmenting the Food Supply of Predaceous Fish Fry in Hatcheries," by George O. Schumann, article, The Progressive Fish-Culturist, vol. 25, no 4, October 1963, pp. 172-174, printed, single copy 25 cents.

"Differential Survival of Rainbow Trout Fed Living Organisms and Hatchery Diets," by Edwin L. Cooper and Joseph H. Grosslight, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 193-197, printed, single copy 25 cents.

"The Effects of Copper Sulfate on Microcystis and Zooplankton in Ponds," by Johnie H. Crance, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 199-202, illus., printed, single copy 25 cents.

Equilibrium Yield and Management of Cutthroat Trout in Yellowstone Lake, by Norman G. Benson and Ross V. Bulkley, Research Report 62, 50 pp., illus., printed, 35 cents, 1963.

"A New Ichthyosporidium Parasite of the Spot Leiostomus xanthurus): A Possible Answer to Recent Oyster Mortalities," by Frank J. Schwartz, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 181-186, illus., printed, single copy 25 cents.

"Oregon Pellets," by Wallace F. Hublou, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 175-180, printed, single copy 25 cents. Summarizes the production feeding results with the Oregon pellet (a fish food) from 1959 to 1963 at the Oregon Fish Commission's 16 salmon hatcheries.

"A Survey of Licensed Commercial Trout Hatcheries in Ontario," by Hugh R. McCrimmon and A. H. Berst, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 187-192, illus., printed, single copy 25 cents.

"A Unique Source of Warm-Water Fish for Restocking Managed Waters," by Russell A. Cookingham and Carleton Hudson, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 208-210, illus., printed, single copy 25 cents.

"A Utility Raft for Fishery Work," by Brian J. Rothchild, article, The Progressive Fish-Culturist, vol. 25, no. 4, October 1963, pp. 218-219, illus., printed, single copy 25 cents.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ALASKA:

Alaska's Animals and Fishes, by Frank Dufresne, 314 pp., illus., printed, 1946. A. S. Barnes and Company, 232 Madison Ave., New York 16, N. Y.

The Kingdom of the Seal, by Francis M. Menager, 222 pp., illus., printed, 1962. Loyola University Press, 3441 N. Ashland Ave., Chicago 13, Ill. An account of a missionary's experiences among Alaskan eskimos. Includes some information on sealing and a chapter on subsistence fishing.

ALMANAC:

The American Ephemeris and Nautical Almanac for the Year 1965, 519 pp., illus., printed, $3.75, 1963. Nautical Almanac Office, U. S. Naval Observatory, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.) Presents information relating to the sun, moon, planets, stars, eclipses, ephemerides, and satellites for the year 1964.

ASCORBIC ACID:

"Studies on Ascorbic Acid in Fish Tissues," by P. Ambuja Bai and M. Kalyani, article, Journal of Animal Morphology and Physiology, vol. 7, no. 2, 1960, pp. 162-166, printed. Journal of Animal Morphology and Physiology, Bombay, India.

AUSTRALIA:

Foreign Trade Regulations of Australia, by Dane M. Black, OBR 63-129, 12 pp., printed, 15 cents, October 1963. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) A report on Australia's foreign trade regulations was issued recently by the U. S. Department of Commerce. The Government's policy is to offer protection under the customs tariff to "economic and efficient" local industries. The report discusses Australian trade policy, import tariff system, sales and other internal taxes, customs documentation, and labeling and marking requirements. It also covers special customs provisions, nontariff import trade controls, Australia's export controls, United States import and export controls, and diplomatic representation between the two countries.

Report by the Chief Secretary on Fisheries in New South Wales, for the Year Ended 30th June, 1962, 15 pp., printed, 1963. Office of the Chief Secretary (Parliament), Sydney, Australia.

Southern Pelagic Project Six-Monthly Review, No. 5 October 1963, 9 pp., processed. Southern Pelagic

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Project Laboratory, Camberwell, Victoria, Australia. Discusses research vessel operations, field operations and intelligence unit, tuna research, Australian salmon research, spiny lobster research, and catch sampling.

BACTERIOLOGY:
"Las Bacterias y los Seres Marinos" (Bacteria and Marine Life), article, Puntal, vol. X, no. 113, August 1963, pp. 10-11, printed in Spanish, single copy 12 ptas. (about 20 U. S. cents). Puntal, Apartado de Correos 316, Alicante, Spain.

BASS:
Catch Records from the Striped Bass Sportfishery in California, by Harold K. Chadwick, 26 pp., illus., printed. (Reprinted from California Fish and Game, vol. 48, no. 3, July 1963, pp. 153-177.) Printing Division, Documents Section, Department of Fish and Game, N. Seventh St. at Richards Blvd., Sacramento 14, Calif.

BIOCHEMISTRY:
"Comparison of Chemical and Organoleptic Data Obtained on Thawed and Unthawed Frozen Cod, Haddock, and Perch Fillets," by Fred Hillig and others, article, Journal of the Association of Official Agricultural Chemists, vol. 46, June 1963, pp. 493-517, printed. Association of Official Agricultural Chemists, P. O. Box 540, Benjamin Franklin Station, Washington 4, D. C.

BIVALVES:
Common Marine Bivalves of California, by John E. Fitch, Fish Bulletin No. 90, 107 pp., illus., printed, 1953. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

BLACK CROAKER:
"Life-History and Ecologic Notes on the Black Croaker," by Conrad Limbaugh, 12 pp., illus., printed. (Reprinted from California Fish and Game vol. 47, no. 2, April 1961, pp. 163-174.) Printing Division, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

BRAZIL:
"Erradicacao de Piranhas no Acude Publico 'Poco da Cruz'--Inaja, Pernambuco--Ostariophisi, Characidae, Serrasalminae. 1--Reconhecimento da Bacia Hidrografica (1)" (Eradication of Piranhas in the Poco da Cruz Public Dam--Inaja, Pernambuco--Ostariophisi, Characidae, Serrasalminae. 1--Survey of the Hydrographic Basin), by R. Adhemar Braga, article, Boletim do Museu Nacional, Zoologia no. 226, May 31, 1961, pp. 1-32, illus., printed in Portuguese with English summary. Servicio de Piscicultura do D.N.O.C.S., Av. do Imperador, 1313, Cx. Postal 25, Fortaleza, Ceara, Brazil. The general objective of the survey was to verify the possibility of eradicating piranhas in the Poco da Cruz Dam. Findings showed that eradication was possible and could be done in 3 to 4 months with 5 percent Rotenone.

BYPRODUCTS:
"Nutritional Value of Fish Products Told. Part I--Fish Products in Poultry Rations," by Elbert J. Day; "Part II--Amino Acid Adequacy, Protein Efficiency," by G. Richard Childs; and "Part III--Methodology in the Nutritional Evaluation of Protein (for Poultry)," by Hans Fisher, articles, Feedstuffs, vol. 35, April 6, 1963, pp. 20, 75, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

CALIFORNIA:
California Fish and Game, vol. 49, no. 4, October 1963, 97 pp., illus., printed, single copy 75 cents. Printing Division, Documents Section, Department of Fish and Game, Sacramento 14, Calif. "Food of Young-of-the-Year Striped Bass (Roccus saxatilis) in the Sacramento-San Joaquin River System," by William Heubach, Robert J. Toth, and Alan M. McCready; "Fishes Collected in the Eastern Pacific during Tuna Cruises, 1952 through 1959," by Harold B. Clemens and John C. Nowell; "Mass Mortality of Marine Organisms Attributed to the 'Red Tide' in Southern California," by Donald J. Reish; "Egg-Cases of Some Elasmobranchs and a Cyclostome from Californian Waters," by Keith W. Cox; "Age and Length Composition of the Sardine Catch Off the Pacific Coast of the United States and Mexico in 1960-61," by Robert S. Wolf and Anita E. Daugherty; "Preliminary Age Determination of Bluefin Tuna, Thunnus thynnus," by Robert R. Bell; and "Migration of a Tagged Bluefin Tuna Across the Pacific Ocean," by Craig J. Orange and Bernard D. Fink.

Common Ocean Fishes of the California Coast, by Phil M. Roedel, Fish Bulletin No. 91, 181 pp., illus., printed, 1953. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"Estimating the Number of Angling License Purchasers," by Norman J. Abramson, 3 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 4, October 1962, pp. 253-255.) Printing Division, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"Mission Bay, a Review of Previous Studies and the Status of the Sportfishery," by Gordon A. Chapman, 14 pp., printed. (Reprinted from California Fish and Game, vol. 49, no.1, January 1963, pp. 30-43.) Printing Division, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

The Names of Certain Marine Fishes of California, by Phil M. Roedel, 18 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 1, January 1962, pp. 19-34.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento, Calif.

Ocean Fishing Map of San Francisco, San Mateo and Santa Cruz Counties and the Elkhorn Slough Area of Monterey County, accordion-folded booklet, illus., printed. Conservation Education, Department of Fish and Game, 722 Capitol Ave., Sacramento, Calif.

"An Outline of California Fishing Gear," by W. L. Scofield, 10 pp., illus., printed. (Reprinted from California Fish and Game, vol. 37, no. 4, October 1951, pp. 361-370.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"A Sea Urchin, a Lobster and a Fish, New to the Marine Fauna of California," by John E. Fitch, 6 pp., illus., printed. (Reprinted from California Fish and Game, vol. 48, no. 4, October 1962, pp. 216-221.)

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

CANADA:

"Canadian Summer Fisheries--1963," article, Trade News, vol. 16, no. 4, October 1963, pp. 6-9, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. In the Maritimes and Quebec, all the summer fisheries started well except lobstering and by the end of June the total catch was ahead in both volume and value. Plans were announced for the construction of 2 fish-processing plants in Nova Scotia and 2 in Prince Edward Island. Despite strikes on the Pacific Coast, good catches of halibut and other groundfish were made, although halibut prices were down because of large stocks carried over from the previous season. Salmon landings were fair but the season's pack to the end of August amounted to only a little more than half that of 1962. The fresh-water fisheries season ended with markets and prices firming and plans being made for more fish to be frozen and packed in the Arctic areas. Shipment of live food fish from northern Ontario to the United States failed to meet the demand because of short supply.

A Review of the Strait of Georgia Trawl Fishery, by C. R. Forrester and K. S. Ketchen, Bulletin No. 139, 93 pp., printed, 1963. Fisheries Research Board of Canada, Sir Charles Tupper Bldg., Riverside Dr., Ottawa, Canada.

CANNING:

"Fiskehermetikkindustrien i Spania Enkelte Andre Land" (Fish Canning Industry in Spain and a Few Other Countries), by B. Lovas-Svendsen, article, Tidsskrift for Hermetikindustri, vol. 49, no. 11, November 1963, pp. 431-432, 434, illus., printed in Norwegian. Norske Hermetikfabrikers Landsforening, Stavanger, Norway.

CARRAGEENIN:

"The Antithrombic Activity of Carrageenin in Human Blood," by W. W. Hawkins and Verna G. Leonard, article, Canadian Journal of Biochemistry and Physiology, vol. 41, May 1963, pp. 1325-1327, printed. National Research Council, Ottawa, Canada. Carrageenin is a sulfated galactan present in the red seaweeds Chondrus and Gigartina.

CATFISH:

"A Close Look at One of Tennessee's Leading Families and Its Problems," by John Conder, article, The Tennessee Conservationist, vol. XXXI, no. 11, November 1963, pp. 8-9, 13, illus., printed. Game and Fish Commission, 264 Cordell Hull Bldg., 436 Sixth Ave. N., Nashville, Tenn.

CEPHALOPODS:

Cephalopods of the Philippine Islands, by Gilbert L. Voss, Bulletin 234, 184 pp., illus., printed, $1, 1963. Smithsonian Institution, U. S. National Museum, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.)

CETACEANS:

Damage Caused by Porpoises and Other Predatory Marine Animals, by C. Ravel, GFCM Studies and Reviews No. 22, 10 pp., processed, November 1963. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. Discusses locations near Mediterranean countries where porpoises and dolphins are most often encountered; damage caused to nets by these animals; and methods used to control them. Since their meat is edible, market promotion of these species might result in a demand which would reduce their numbers.

CHLOROPHYLL:

Distribution of Chlorophyll in the Straits of Florida, by James E. Alexander and E. F. Corcoran, Contribution No. 450, 4 pp., illus., printed. (Reprinted from Limnology and Oceanography, vol. 8, no. 2, April 1963, pp. 294-297.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

CLAMS:

"Histology of the Reproductive System of the Soft-Shell Clam (Mya arenaria)," by Alden P. Stickney, article, The Biological Bulletin, vol. 125, no. 2, October 1963, pp. 344-351, illus., printed, single copy $2.50. Marine Biological Laboratory, Woods Hole, Mass.

"Low-Cost Clam Purification System is Promising," by R. Anthony Barnes, article, National Fisherman/Maine Coast Fisherman, vol. 44, June 1963, pp. 33, 37, printed. Journal Publishing Co., Belfast, Me.

"The Pismo Clam in 1960," by John L. Baxter, 5 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 1, January 1962, pp. 35-37.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento, Calif.

"The Incidence of Malacobdella grossa in Hard Clams from Nantucket Sound, Massachusetts," by John W. Ropes, article, Limnology and Oceanography, vol. VIII, no. 3, July 1963, pp. 353-355, illus., printed. American Society of Limnology and Oceanography, Lawrence, Kans.

The Pismo Clam, by John E. Fitch, Marine Resources Leaflet No. 1, 24 pp., illus., processed, 1961. Department of Fish and Game, 722 Capitol Ave., Sacramento 14, Calif.

"Seasonal Variation in Chemical Composition of Clam (Tapes pullastra Mont)," by G. Alvarez-Seoane, article, Investigacion Pesquera, no. 17, 1960, pp. 3-32, printed in Spanish. Instituto de Investigaciones Pesqueras, Paseo Nacional, s/n, Barcelona-3, Spain.

COLOMBIA:

"Como Se Evade Nuestra Riqueza Pesquera" (How Our Fishery Wealth Is Wasted), by Tristan del Cauca, article, Puntal, vol. X, no. 113, August 1963, pp. 16-19, illus., printed in Spanish, single copy 12 ptas. (about 20 U. S. cents). Puntal, Apartado de Correos 316, Alicante, Spain.

CONTAINERS:

"Iron Sulfide Blackening in Canned Protein Foods: Oxidation and Reduction Mechanisms in Relation to Sulfur and Iron," by George M. Pigott and Alexander M. Dol-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

lar, article, Food Technology, vol. 17, April 1963, pp. 115-118, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

"The Mechanism of Iron Sulfide Discoloration in Cans of Shrimp," by Mary H. Thompson, article, Food Technology, vol. 17, May 1963, pp. 157-163, printed. The Garrard Press, 510 N. Hickory, Champaign, Ill.

DENMARK:

Fiskeriarbogen 1964 (The Fisheries Yearbook, 1964), edited by J. Fr. Simony, 815 pp., illus., printed in Danish, 14.17 kr. (about US$2.05), December 1963. Iver C. Weilbach & Company, Amaliegade 30, Copenhagen, Denmark. A comprehensive collection of information on navigation, fishery rules and regulations, inspection, and related topics, primarily for Danish, Faroese, and Greenland fishermen, but it is also used by yachtsmen and small craft. Issued annually by the Ministry of Fisheries about the first of the year, the current issue is the 71st edition. The major sections are: (1) 1964 calendar--navigation tables, courses, and distances; (2) rules of navigation and carrying of lights--harbor bylaws, buoyage, precautions with respect to submarine cables, light and signal stations, radiotelephony and telegraphy; (3) acts and regulations governing the fishing industry--control of quality and exports of fish, fisheries statistics, and shipping; (4) index of fishing vessels, harbor signal letters; (5) acts and regulations governing inspection of ships, ship construction and equipment, medical supplies, and medical examination of crew; (6) fishery inspection, quarantine regulations; (7) accident insurance; (8) acts concerning loans to the fishing industry; (9) acts and regulations on hunting; (10) guidance on shipwrecks and accidents; (11) institutions and addresses; (12) fish names and market classifications, courses, measures and weights; and (13) stability of fishing vessels. There is also a detailed alphabetical index of the subject matter, and a list, by type of product, of the numerous fishery trade advertisements in the Yearbook. The final section is an article entitled "Stability of Fishing Vessels," by Leo Retvig, of the Directorate for the Government's Ship Inspection. This is a review of research on stability and stability conditions in fishing vessels, stimulated by the loss of a number of Danish steel fishing cutters in February and the Autumn of 1963. The article is divided into sections on stability, background, inclining tests and stability, rolling tests, wood and steel, and demand for stability research.

--Andrew W. Anderson

DRYING:

"New Fish Drying Plant," article, World Fishing, vol. 12, May 1963, pp. 37, 46, printed. John Trundell and Partners Ltd., St. Richard's House, Eversholt St., London NW., England.

ECOLOGY:

Marine Distributions, by M. J. Dunbar, 118 pp., illus., printed, $5, 1963. University of Toronto Press, Toronto, Canada.

EELS:

A Smoked Eel Industry in Victoria, by D. D. Lynch, Fisheries Circular No. 8, 11 pp., illus., processed, October 1962. Fisheries and Wildlife Department, 605 Flinders St., Melbourne C3, Australia.

ELECTRICAL FISHING:

"Apres le Congres Mondial des Peches (Suite): De la Technique Sovietique a la Peche a l'Electricite" (After the World Congress of Fisheries: On the Soviet Technique of Electrical Fishing), by R. Lemaire, article, France Peche, no. 77, October 1963, pp. 39-41, printed in French, single copy 2.5 F (about 50 U.S. cents). France Peche, Boite Postale 179, Lorient, France.

"Electric Fishing--A Practical Application," article, World Fishing, vol. 12, April 1963, p. 35, printed. John Trundell and Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

EUROPEAN ECONOMIC COMMUNITY:

Statistique des Peches (Fishery Statistics, 1950-1961), 75 pp., printed in French and German, 1963. Communaute Economique Europeenne, Office Statistique, Brussels, Belgium.

FAUNA:

Life Along the Seashore, by Alan Solem, 32 pp., illus., printed, 99 cents, 1963. Encyclopaedia Britannica Press, 425 N. Michigan Ave., Chicago 11, Ill.

FINANCIAL ASSISTANCE:

Financial Assistance Policies and Administration for Fishery Industries, by E. S. Holliman, Fisheries Studies No. 11, 130 pp., printed, $1, 1962. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. This study was undertaken in response to a recommendation of the Technical Meeting on Credit for Fishery Industries held in Paris, October 17-22, 1960. The principal objective of this meeting, organized by the Food and Agriculture Organization of the United Nations (FAO), was to provide a forum for an exchange of views and experience in the organization, administration, and evaluation of fishery credit systems in FAO member countries. The report covers objectives of fishery credit policies in developed and developing countries, implications of policy objectives on the nature and scope of credit assistance, and the measurement of needs. Also discusses the form of assistance, organization of financial assistance, administration of aid programs, and coordination and review of fishery credit policies.

FISH BEHAVIOR:

"Concentrating Factors in Fisheries," by P.M.J. Woodhead, article, World Fishing, vol. 12, May 1963, pp. 63-64, 67-68, printed. John Trundell and Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

Conditioned Avoidance Learning in Two Fish Species, by Leon S. Otis and Jean A. Cerf, 4 pp., printed, April 18, 1963. (Reprinted from Psychological Reports, vol. 12, 1963, pp. 679-682.) Stanford Research Institute, Menlo Park, Calif.

"Electronically Scanned Sonar in the Investigation of Fish Behaviour," by V. G. Welsby, J. H.S. Blaxter, and C.J. Chapman, article, Nature, vol. 199, no. 4897, September 7, 1963, pp. 980-981, illus., printed, single

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

copy 4s. (about 55 U. S. cents). St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

"The Visual Sense of Pelagic Fishes Especially the Visual Axis and Accommodation," by Tamotsu Tamura and Warren J. Wisby, article, Bulletin of Marine Science of the Gulf and Caribbean, vol. 13, no. 3, September 1963, pp. 433-447, printed in English with Spanish summary. Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla.

FISH COOKERY:
"Time-Temperature Studies of Baked Loaves (Meat, Fish, and Poultry)," by Karla Longree and others, article, Journal of the American Dietetic Association, vol. 42, June 1963, pp. 500-504, printed. American Dietetic Association, 620 North Michigan Ave., Chicago 11, Ill. Describes an investigation to study the effect of various time and temperature combinations used in baking: beef loaf with raw meat; salmon loaf made with canned fish; and turkey loaf made with cooked meat; whole egg solids were used as the binder. Purpose was to determine the bacteriologic safety of products using whole egg solids.

FISHERY ECONOMICS:
"Place of Economics in Fisheries," by G. M. Gerhardsen, article, Fishing News International, vol. 2, April-June 1963, pp. 198-200, printed. A. J. Heighway Publications Ltd., 110 Fleet Street, London EC4, England.

FISHERY RESEARCH:
Computer Programs for Fisheries Problems, 2 pp., Fisheries Circular No. 7, processed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

FISH LIVER OIL:
"Seasonal Variations in Cod Liver Oil," by K. W. DeWitt, article, Journal of the Science of Food and Agriculture, vol. 14, February 1963, pp. 92-98, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

FISH MEAL:
"Chemical and Nutritional Changes in Stored Herring Meal. 4--Nutritional Significance of Oxidation of the Oil," by K. J. Carpenter, article, British Journal of Nutrition, vol. 17, no. 2, 1963, pp. 151-169, printed. Cambridge University Press, 200 Euston Rd., London NW1, England.

"Simple Method for Producing Highly Nutritious Fish Meal," by A. Valente de Fonseca Alves da Costa, article, Boletim da Pesca, vol. 13, no. 72, 1961, pp. 55-56, printed in Portuguese. Gabinete de Estudos das Pescas, 644 R.S. Bento, Lisbon, Portugal.

"Studies on the Value of Bone Meal and Fish Meal as Phosphatic Fertilizers," by M. O. Ghani, K. A. Hasan, and M. A. Mannan, article, Pakistan Journal of Biological and Agricultural Sciences, vol. 4, no. 1, 1962, pp. 44-52, printed. Pakistan Journal of Biological and Agricultural Sciences, Dacca, Pakistan.

FISH OILS:
"On the Structure of Highly Unsaturated Fatty Acids of Fish Oils by High Resolution Nuclear Magnetic Resonance Spectral Analysis," by Tetsutaro Hashimoto and others, article, Journal of the American Oil Chemists' Society, vol. 40, April 1963, pp. 124-128, printed. American Oil Chemists' Society, 35 E. Wacker Dr., Chicago 1, Ill.

FISH POPULATIONS:
Concerning the Causes of Fluctuations in the Abundance of Fishes, by G. V. Nikolsky, Translation Series No. 389, 11 pp., processed, 1962. (Translated from the Russian, Voprosy Ikhtiologii, vol. 1, no. 4 (21), 1961, pp. 659-665.) The Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada.

Demographic Diagnosis on Fish Populations in Trout Streams, by R. Cuinat and R. Vibert, GFCM Studies and Reviews No. 21, 30 pp., illus., processed, October 1963. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

FISH SOLUBLES:
"Unidentified Chick Growth Factor in Fish Solubles," by F. H. Steinke, H. R. Bird, and F. M. Strong, article, Journal of Nutrition, vol. 80, May 1963, pp. 60-68, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

FOOD AND AGRICULTURE ORGANIZATION:
Bulletin of Fishery Statistics, vol. 1--Landings by Species, 1937-38, 1947-61, 205 pp., processed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy. This publication will be issued from time to time in a limited number of copies to supplement the tables and text of the Yearbooks of Fishery Statistics, to circulate new tables on a trial basis prior to their incorporation in the Yearbooks, and also to present detailed statistics of regional interest, statistics on selected fishery commodities, and special tabulations for meetings and working parties. This issue contains, in an extensively revised form, for 2 prewar years and 15 postwar years, landings statistics for approximately 170 species items broken down by country. Includes summary data on landings of aquatic animals and plants by divisions and by groups of species and landings by groups of species and by species; and landings by species and by country of fresh-water and diadromous fish, marine fish, and crustaceans, molluscs, and other invertebrates. Data for whales, seals, and miscellaneous aquatic mammals, miscellaneous aquatic animals and residues, and aquatic plants are not covered.

The State of Food and Agriculture, 1963, 227 pp., printed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Yearbook of Fishery Statistics, 1962 (Production and Fishery Craft), vol. XV, 454 pp., illus., processed in French, Spanish, and English, $8, 1963. Food and Agri-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

culture Organization of the United Nations, Rome, Italy. (Sold in United States by Columbia University Press, International Documents Service, 2960 Broadway, New York 27, N. Y.) This edition contains fishery statistics on catch and landings by quantity and value, production of preserved and processed commodities, fishing craft, and whaling from all countries. The toal nominal catch of fish, crustaceans and molluscs and other aquatic animals except seals and whales, residues and aquatic plants, throughout the world in 1962 is estimated at over 44 million metric tons, an increase of 7 percent over the nominal catch of 1961, and is once more greater than in any other year. Out of the total of over 44 million tons nearly 12 million tons were used for the manufacture of fish meals for animal feeding and about another million for miscellaneous purposes. The balance of about 32 million tons was used for human food in fresh, frozen, cured, or canned form.

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Program for Technical Assistance for developing the fisheries of many countries. These reports have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Third Report to the Government of India on Fishing Boats, by Peter Gurtner, EPTA Report No. 1535, 105 pp., processed, 1963.

Report to the Government of the Phillippines on Fresh-water Fisheries Investigations, by John W. Parsons, EPTA Report No. 1565, processed, 1962.

Report to the Government of Aden on the Crawfish Resources of Eastern Aden Protectorate, by R. W. George, EPTA Report No. 1696, 23 pp., processed, 1963.

Fourth Report to the Government of India on Fishing Boats, by Albert Sutherland, EPTA Report No. 1710, 24 pp., illus., processed, 1963.

Report to the Government of the Federation of Rhodesia and Nyasaland on the Fisheries Development Program for Lake Tanganyika (Northern Rhodesia), by Alphonse Collart, EPTA Report No. 1716, 20 pp., processed, 1963.

Second Report to the Government of Guatemala on Development on Inland Fisheries, by S. Y. Lin, EPTA Report No. 1719, 48 pp., processed, 1963.

Report on the Regional Training Center on Fish Processing Technology Held in Quezon City, Philippines 6 March-14 April, 1961, by Dr. Rudolf Kreuzer, EPTA Report No. 1725, 45 pp., processed, 1963.

Report to the Government of El Salvador on an Inland Fisheries Project, by S. Y. Lin, EPTA Report No. 1735, 26 pp., processed, 1963.

FRANCE:

Statistique des Peches Maritimes, 1958 et 1960 (Marine Fishery Statistics, 1958 and 1960), 2 vol., printed, 1963. Secretariat General de la Marine Marchande, Direction des Peches Maritimes, Paris, France.

FREEZE-DRYING:

"Developing and Testing Packages for Freeze Dried Foods," by H. E. Collins and R. L. Boegershausen, article, Package Engineering, vol. 8, no.1, January 1963, pp. 55-61, printed. Angus J. Ray, 185 W. Wabash Ave., Chicago, Ill.

A Directory of Freeze-Drying: Food Processors, Equipment Firms, and Others, by Kermit Bird, 10 pp., processed, revised October 1963. Division of Information, Office Of Management Services, U. S. Department of Agriculture, Washington, D. C., 20250. Lists the names and addresses of 13 United States and Canadian and 23 foreign freeze-dry food processors, together with a description of the types of foods processed. Also includes names and addresses of 16 United States and Canadian and 11 foreign freeze-dry equipment manufacturers, and a description of the type of equipment produced. The final section lists names and addresses and types of businesses of 22 miscellaneous domestic and foreign firms, including handlers of freeze-dried foods, processors of non-food items, manufacturers of controls, and others.

Freeze-Dried Foods and the Frozen Food Industry, by Kermit Bird, 24 pp., illus., processed, October 1963. Division of Information, Office of Management Services, U. S. Department of Agriculture, Washington, D. C., 20250. Discusses the freeze-drying process and its advantages and disadvantages; major markets for freeze-dried foods; quality of freeze-dried foods as compared with frozen foods; costs of the freeze-drying process; expected freeze-drying volumes; and the future of freeze-drying. Includes statistical tables presenting data on taste tests of freeze-dried and frozen shrimp, crab, and other foods; estimates of capacity, investment, and costs of a typical freeze-drying plant; average costs of freeze-dry processing of shrimp and 3 other foods; length of processing season and average freeze-drying costs per pound of water; and anticipated increases in refrigeration needs caused by freeze-drying industry in 1967.

"Freeze Dry Continuously," article, Food Processing, vol. 24, June 1963, pp. 68-72, printed. Putman Publishing Company, 111 E. Delaware Pl., Chicago 11, Ill.

"Die kontinuierliche Gefriertrocknung von Lebensmitteln" (Continuous Freeze Drying of Foodstuffs), by U. Hackenberg, article, Dechema Monographien, vol. 46, nos. 761-780, 1963, pp. 161-171, illus., printed in German. Rhengai-Allee 25, Frankfurt, Germany.

FREEZER TRAWLERS:

"Freezing Plants on Board Trawlers," by S. Rodermund, article, Bulletin Technical Veritas, vol. 45, no. 4, April 1963, pp. 69-71, illus., printed in French. Bureau Veritas, 31 rue Henri-Rochefort, Paris, France.

FREEZING FISH AT SEA:

"Freezing at Sea with Vertical Plate Freezers," article, Modern Refrigeration, vol. 66, May 1963, pp. 422-423, printed. Refrigeration Press Ltd., Maclaren House, 131 Great Suffolk Street, London SE1, England.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

tory; "Modern Northern Pacific Halibut Gear;" "Whose Fish? Whose Sea? What Limits?;" "Halibut--The King of the Flatfishes;" "How Halibut is Marketed;" "Canadian Halibut Fleet, 1963;" "United States Halibut Fleet, 1963;" "Massive Bering Operations Put Leverage on Halibut;" "The Men Who Man the Boats;" "Asian Halibut Production Volume and Pricing Stirs Markets in U. S. and U. K.;" and "Halibut Fishery of Norway."

HANDLING:

Handling Inshore Fish, by J. J. Waterman, Torry Advisory Note no. 11, 3 pp., printed, 1963. Torry Research Station, 135 Abbey Rd., Aberdeen, Scotland.

HEMOGLOBIN:

"Studies on Fish Hemoglobins Chinook Salmon and Rainbow Trout," by Donald R. Buhler, article, Journal of Biological Chemistry, vol. 238, May 1963, pp. 1665-1674, printed. American Society of Biological Chemists, 428 East Preston St., Baltimore 2, Md.

INTERNATIONAL COMMISSIONS:

International Commission for the Northwest Atlantic Fisheries, Statistical Bulletin for the Year 1961, vol. 11, 91 pp., illus., printed, C$3, 1963. International Commission for the Northwest Atlantic Fisheries, Halifax, N. S., Canada. This bulletin is divided into two parts: Part 1 summarizes statistics on fishery landings in the Convention Area, 1952-1961; and Part 2 includes statistical tables dealing with the fisheries in 1961. The presentation of the basic statistical data again has been designed to place emphasis on area and month of fishing. Contains a summary of all landings by species group, country, and statistical subdivision; landings of cod, haddock, ocean perch, halibut, and flounder for each type of gear; landings of each species by subarea; and fishing effort and landings by country, gear, and subarea. Member countries include Canada, Denmark, France, Germany, Iceland, Italy, Norway, Poland, Portugal, Spain, U.S.S.R., United Kingdom, and the United States.

(North Pacific Fur Seal Commission) Proceedings of the Sixth Annual Meeting, November 26-December 3, 1962, Washington, D. C., 36 pp., processed. Secretary, North Pacific Fur Seal Commission, U. S. Fish and Wildlife Service, Washington, D. C., 20240. The North Pacific Fur Seal Commission was established in January 1958, during a meeting held in Washington, D. C. The Commission was organized pursuant to the Interim Convention on Conservation of North Pacific Fur Seals, signed in Washington, D. C., on February 9, 1957, by the Governments of Canada, Japan, the U.S.S.R., and the United States. The Convention came into force on October 14, 1957. This report contains a summary of the proceedings of the Sixth Annual Meeting, a report of the Standing Scientific Committee, a list of participants attending the meeting, summaries of fur-seal investigations during 1962, plans for investigations during 1963, and administrative report of the Secretary to the Sixth Meeting.

IRRADIATION PRESERVATION:

"Changes in the Microflora of Haddock Fillets and Shucked Soft-Shelled Clams After Irradiation with Co^{60} Gamma Rays and Storage At O C. and 6 C.," by E. B. Masurovsky, J. S. Voss, and S. A. Goldblith, article, Applied Microbiology, vol. 11, May 1963, pp. 229-234, printed. Williams and Wilkins Co., 428 East Preston St., Baltimore 2, Md. Data were previously presented on the micro-organisms obtained from shucked soft-shelled clams and haddock fillets before and, at various periods of time, after irradiation with Co^{60} gamma rays and storage at 0^{o} and 6^{o} C. This report presents the changes that took place in the constitution of the microflora of these marine products as the microbial population increased, and then they correlated these findings with such deleterious effects as spoilage and discoloration. They also searched for micro-organisms of public health significance in the hope that any problems associated with such microbes in radiation-treated seafoods might be brought into clearer perspective.

"Effect of Substerilization Doses of Co^{60} Gamma Radiation on the Cold-Storage Life Extension of Shucked Soft-Shelled Clams and Haddock Filletd," by E. B. Masurovsky, S. A. Goldblith and J. T. R. Nikerson, article, Applied Microbiology, vol. 11, May 1963, pp 220-228, printed. Williams and Wilkins Co., 428 East Preston St., Baltimore 2, Md.

"Food Preservation by Radiation, Its Present Status--Its Future Potential," by Samuel A. Goldblith, article, Food Engineering, vol. 35, May 1963, pp. 49-52, printed. Chilton Co., Chestnut and 56th Sts., Philadelphia 39, Pa.

JAPAN:

Bulletin of the Hokkaido Regional Fisheries Research Laboratory, no. 27, September 1963, 85 pp., illus., printed in Japanese with English summaries. Hokkaido Regional Fisheries Research Laboratory, Yoichi, Hokkaido, Japan. Contains, among others, articles on: "Male and Female Catches of the Pacific Salmon by the Japanese High Seas Fisheries," by T. Ishida; "Mesh Selective Biases on the Gill-Net Caught Sockeye and Chum Salmon," by T. Ishida; "Biochemical Studies on Squid. XXI--Re-Examination on the Crude Fat Content of Squid Meat," by K. Kitabayashi and others; "_____. XXII--Inactivation of Trypsin by the Water Extract of Squid Meat," by S. Ishikawa and K. Kitabayashi; and "Studies on Fungi Isolated from Marine Products. III--Influence of Various Food Additives on the Growth of Fungi Isolated from Smoked Squid (1)," by Y. Okunda and T. Sato.

JELLYFISH:

Notes on Freshwater Jellyfish In Ontario, by Glenn B. Wiggins, R. E. Whitfield, and F. A. Walden, No. 45, 6 pp., printed, January 15, 1957. Contributions of the Royal Ontario Museum, Division of Zoology and Palaeontology, 100 Queen's Park, Toronto, Canada.

KELP:

"History of Kelp Harvesting in California," by W. L. Scofield, 24 pp., illus., printed. (Reprinted from California Fish and Game, vol. 45, no. 3, July 1959, pp. 135-157.) Printing Office, Documents Section, Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

FRESH FISH:
"L'Avenir de la Peche et de la Consommation du Poisson Frais" (The Prospects for the Fishery and for the Consumption of Fresh Fish), by M. Keller, article, France Peche, no. 77, October 1963, pp. 29-32, illus., printed in French, single copy 2.5 F (about 50 U.S. cents). France Peche, Boite Postale 179, Lorient, France.

GASTROPOD:
"A New Pleurotomariid Gastropod Trawled in the Straits of Florida by R/V Gerda," by Frederick M. Bayer, Contribution No. 494, 5 pp., illus., printed in English with Spanish summary. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 13, no. 3, September 1963, pp. 488-492.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

GEAR:
"Discharging Fish by Suction," article, World Fishing, vol. 12, April 1963, pp. 33-34, printed. John Trundell and Partners Ltd., St. Richard's House, Eversholt St., London NW1, England.

Drift and Set Line Fishing Gear in California, by W. L. Scofield, Fish Bulletin No. 66, 41 pp., illus., printed, 1947. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"New Japanese Net-Finding Instrument," article, Canadian Fisherman, vol. 20, May 1963, p. 27, printed. National Business Publications Ltd., Gardenvale, Que., Canada.

Trolling Gear in California, by W. L. Scofield, Fish Bulletin 103, 45 pp., illus., printed, 1956. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

GENERAL:
Fins and Tails: A Story of Strange Fish, by Elizabeth A. Campbell, 60 pp., illus., printed, $3, 1963. Little, Brown and Co., 34 Beacon St., Boston 6, Mass.

Identification of Sex in Fish, Fisheries Circular No. 10, 7 pp., illus., processed. Fisheries and Wildlife Department, 605 Flinders St., Melbourne C3, Australia.

"El Mar, Profanado" (The Sea, Desecrated), article, Puntal, vol. X, no. 113, August 1963, p. 1, printed in Spanish, single copy 12 ptas. (about 20 U. S. cents). Puntal, Apartado de Correos 316, Alicante, Spain.

GERMAN FEDERAL REPUBLIC:
Berichte der Deutschen Wissenschaftlichen Kommission fur Meeresforschung, Neue Folge, Band XVII, Heft 2, July 1963, 91 pp., illus., printed in German with English summaries. E. Schweizerbart'sche Verlagsbuchhandlung (Nagele u. Obermiller), Stuttgart, Germany. Contains articles on: "Biologisch-Statistische Untersuchugen uber die Deutsche Hochseefischerei. IV--Die Entwicklung der Hochseefischerei in Fangtechnischer, Raumlicher und Biologischer Hinsicht. 7--Ertrags- und Bestandsveranderungen bei den Nutzfischen" (Biological-Statistical Research on German Deep Sea Fishing. IV--Development of Deep Sea Fishing with Regard to the Technique, the Area, and Biological Considerations of the Catch. 7--Changes in Yield and Stock of Commercial Fishes), by Johannes Lundbeck; and "Uber das Wachstum des Steinbutts (Scophthalmus maximus L.) in der Nordsee" (On the Growth of the Turbot--Scophthalmus maximus L.--in the North Sea), by Tekin Mengi.

GREECE:
Marine Science in Greece, by E. C. Haderlie and Adrian F. Richards, 9 pp., printed, June 14, 1963. Office of Naval Research, London, England.

GROUNDFISH:
"Discards of Fish at Sea by Northern New Brunswick Draggers," by Yves Jean, article, Journal of the Fisheries Research Board of Canada, vol. 20, March 1963, pp. 497-524, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

GRUNION:
A Guide to the Grunion, by Boyd W. Walker, 12 pp., illus., printed. (Reprinted from California Fish and Game, vol. 38, no. 3, July 1952, pp. 409-420.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

GUINEA:
Preparing Shipments to Guinea, OBR 63-130, 8 pp., printed, 15 cents, October 1963. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Gives information on requirements for shipping documents; import regulations; mail shipment rules; and labeling, marking, and packing requirements. Also discusses entry, transit, and warehousing of goods; reexportation and free admission; customs procedures; and Guinean Government representation in the United States.

GULF OF MEXICO:
Circulation and Water Mass Distribution in the Gulf of Mexico, by T. Ichiye, Contribution No. 190, printed, 1962. Oceanographic Institute, Florida State University, Tallahassee, Fla.

Surface Currents in the Northeastern Gulf of Mexico, by G. G. Salsman and W. H. Tolbert, Report No. 209, 43 pp., printed, $4.60, August 1963. Navy Mine Defense Laboratory, Panama City, Fla.

HALIBUT:
Pacific Fisherman, vol. 61, no. 10, September 1963, 71 pp., illus., printed, single copy 50 cents. Pacific Fisherman, 500 Howard St., San Francisco, Calif., 94105. This issue, devoted to "Halibut--Fish of Distinction," includes, among others, articles on: "Halibut, an Oceanic Resource in Focus;" "1963--Halibut's Year of Crisis;" "In 1913--Half a Century Ago Halibut Research and Management Was Born;" "American Halibut Markets Closed to Non-Treaty Fish;" "Fathoming Halibut Facts, and How the Resource Was Rebuilt on Them;" "Four Stand-Outs in Service to Pacific Halibut Resource;" "Halibut Association of North America--Promotion and Marketing;" "Halibut 'Lay' Governs Boat and Crew Relations;" "Halibut Climbs Economic Peaks and Dips into the Valleys;" "The Pacific Halibut Fishery--Its Fleet and Its His-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

KELP MEAL:
"The Lack of a Consistent Chick Growth Response to Norwegian Kelp Meal," by E. L. Wisman and C. E. Howes, article, Poultry Science vol. 42, May 1963, pp. 787-790, printed. Poultry Science Association, Ohio State University, Columbus 10, Ohio.

KENYA:
Report on Kenya Fisheries, 1962, 31 pp., printed, 1963. Ministry of Forest Development, Game and Fisheries, Fisheries Division, Nairobi, Kenya.

LABOR LEGISLATION:
Shellfish Processing on the Atlantic and Gulf Coasts--A Study of the Effects of Minimum Wage Coverage, 91 pp., illus., processed, December 1962. Wage and Hour and Public Contract Divisions, U. S. Department of Labor, Washington, D. C., 20210. This report was prepared in response to Congressional requests for an analysis of the special adjustment problems facing the shellfish-processing industry as a result of coming under the minimum wage provisions of the Fair Labor Standards Act in September 1961. Most of the information was obtained through a comprehensive survey covering all plants engaged in processing clams, crabs, oysters, and shrimp on the Atlantic and Gulf Coasts in June 1962. The survey obtained general data on employment and wage rates of all production workers in occupations for which the Wage and Hour and Public Contracts Divisions have issued handicapped worker certificates to qualifying employees. Data were also obtained on hours worked per week and on average weekly earnings. To obtain a picture of the labor force of this industry, data were obtained on age of workers and the characteristics of discharged employees. The report contains sections on the status of the shellfish industry under the Fair Labor Standards Act of 1938; special survey of employment, earnings, and related subjects; and general economic data on the industry.

LAKE ERIE:
Summary Review of the Lake Erie Commercial Fish Catch Since the Beginning of Records, 52 pp., printed, 1962. Water Resources Commission, Lansing, Mich.

MARINE BIOLOGY:
AIBS Bulletin, vol. 13, no. 5, October 1963, 107 pp., illus., printed, single copy $2. American Institute of Biological Sciences, 2000 P St. NW., Washington 6, D. C. This is a special issue devoted to various aspects of marine biology. The section on "National agencies--interest and support," covers the Office of Naval Research, Bureau of Sport Fisheries and Wildlife, U. S. Atomic Energy Commission, Bureau of Commercial Fisheries, National Science Foundation, Smithsonian Institution, Public Health Service, and National Oceanographic Data Center. The section on research and education discusses needs for research and education, and the readiness of aquatic biology for the computer age. The section on international cooperation gives information on the EQUALANT cruises and the International Indian Ocean Expedition. The final section covers research problems of marine organisms, marine bacteriology, phytoplankton and primary production, zooplankton and the food cycle, the deep sea benthos, larval development, pelagic fishes, and the improvement of world fisheries from the biologist's and from the oceanographer's viewpoints.

MARINE MAMMALS:
"The Sea Lions, Seals and Sea Otter of the California Coast," by Paul Bonnot, 19 pp., illus., printed. (Reprinted from California Fish and Game, vol. 37, no. 4, October 1951, pp. 371-389.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

MARINE OILS:
"Progress in Marine Oil Research Conducted and Sponsored by the United States Bureau of Commercial Fisheries," by Neva L. Karrick, article, News Summary No. 10, December 1962, pp. 92-112, printed. International Association of Fish Meal Manufacturers, 70 Wigmore St., London W1, England.

MEETINGS AND PROCEEDINGS:
"North Pacific Treaty Negotiations," article, Trade News, vol. 16, no. 4, October 1963, p. 5, processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

MEXICAN SCAD:
"A Range Extension for the Mexican Scad to Monterey Bay, California," by Herbert W. Freay, 2 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 3, July 1962, pp. 210-211.) Printing Division, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

MOLLUSKS:
"The Effect of Salinity on the Temperature Tolerance of Eggs and Larvae of Some Lamellibranch Mollusks," by Harry C. Davis, 1 p., printed. (Reprinted from Proceedings of the XVI International Congress of Zoology, Washington, D. C., August 20-27, 1963, vol. I.) U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn.

"Observations on Pelagic Mollusks Associated with the Siphonophores Velella and Physalia," by Frederick M. Bayer, Contribution No. 488, 13 pp., illus., printed in English with Spanish summary. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 13, no. 3, September 1963, pp. 454-466.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

MUSSELS:
Mussel Poisoning As a Biological Problem on the Basis of Recent Research on its Causes, by L. von Haraghy, Translation Series No. 379, 7 pp., processed, 1962. (Translated from the German, Helgolander Wissenschaftliche Meetesuntersuchungen herausgegeben von der Biologischen Anstalt Helgoland, vol. 2, no. 3, 1942; pp. 350-351.) Fisheries Research Board of Canada Biological Station, St. Andrews, B. C., Canada.

"Stimulation of Spawning in the Mussels, Mytilus edulis Linnaeus and Mytilus californianus Conrad, by Kraft Mill Effluent," by Wilbur P. Breese, Raymond E. Millemann, and Roland E. Dimick, article, The Biological Bulletin, vol. 125, no. 2, October 1963, pp. 197-205, illus., printed, single copy $2.50. Marine Biological Laboratory, Woods Hole, Mass.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

NAVIGATION:

A Report. . .Concerning Electronic Aids to Navigation for the Fisheries and Other Users, 80 pp., illus., processed, 1961. Ministry of Fisheries and Defense, Oslo, Norway.

NETS:

Fishermen's Knots and Nets, by Raoul Graumont and Elmer Wenstrom, 215 pp., illus., printed, 1948. Cornell Maritime Press, Box 386, Cambridge, Md. Discusses angler's and still fishermen's knots, commercial fishermen's knots, fishing traps and seines, and netmaking and repairing.

Purse Seines and Other Roundhaul Nets in California, by W. L. Scofield, Fish Bulletin No. 81, 87 pp., illus., printed, 1951. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

NEW ENGLAND:

"The Changing Face of the Seafood Industry," article, Frosted Food Field, vol. 36, no. 10, October 1963, pp. 22-25, 32-34, illus., printed, single copy $1. The Olsen Publishing Co., 321 Broadway, New York, N.Y. 10007. Describes the outstanding progress achieved in the New England frozen fish industry during the past 10 years.

NEW ZEALAND:

Report on Fisheries for 1962, 24 pp., printed, 1963. Marine Department, Wellington, New Zealand. Discusses total landings by class and by year, 1945-1962; spiny lobster landings, 1953-1962; fish landings by species, 1961-1962; landings by port; foreign trade in fish and shellfish; sport fishing; fish-liver oil production; whaling, 1962 season; rock and dredged oysters; and production of toheroa (edible mollusk). Also covers whitebait fishing; angling licences; research and investigation--research vessel operations, grid pattern trawling, marine fish studies, marine mammal projects, shellfish studies, trout fisheries, Quinnat salmon, new game fish, introduction of the English mayfly for trout food, and use of insecticides; select committee to inquire into the fishing industry; Freshwater Fisheries Advisory Council; Fishing Industry Advisory Council; and legislation pertaining to fisheries. Includes statistical tables giving data on the number of fishing vessels and fishermen by port or district and method of fishing; quantity of fish and shellfish landed by port; quantity of fish landed by species and type of gear; landings by species and port; landings of fish and spiny lobsters by ports and months; and foreign trade in fishery products.

NIGERIA:

Foreign Trade Regulations of Nigeria, OBR-63-122, 12 pp., printed, September 1963. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Nigeria maintains an open system of imports, with controls imposed on only a few items in order to protect domestic producers, discourage smuggling, or assist indigenous traders. The report discusses Nigeria's trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import trade controls, Nigeria's export controls, United States export and import controls, and diplomatic representation between Nigeria and the United States.

Report of The Federal Fisheries Service, 1961-62 and 1962-63, 26 pp., illus., printed, 1963. Printing Division, Federal Ministry of Information, Lagos, Nigeria. Discusses administrative operations, including Fisheries Service vessels, legislation affecting fisheries, and port facilities; sea research program--oceanography, inventory of resources, bionomics, and publications; Lake Chad research program--production survey and biological studies of lake fish; and brackfish-water fish culture.

NORTH ATLANTIC:

International Collaboration in Fisheries Research; a Historical Review, with Particular Reference to the North Atlantic Region. Fisheries Biology Technical Paper No. 33, 6 pp., processed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

NUTRITION:

Man, Land, and Food--Looking Ahead at World Food Needs, by Lester R. Brown, Foreign Agricultural Economic Report No. 11, 161 pp., illus., processed, 50 cents, November 1963. Regional Analysis Division, Economic Research Service, U. S. Department of Agriculture, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) This analysis seeks to assess the magnitude and direction of the effort which must be made during the remaining 4 decades of this century if the projected population, double today's figure, is to be sustained. The role of the United States agricultural sector, as a source of food capital and technical assistance for the food-scarce, less developed regions, is growing steadily, promising to achieve an importance without precedent.

OCEANOGRAPHY:

The Atlantic Equatorial Undercurrent, by W. G. Metcalf, A. D. Voorhis, and M. C. Stalcup, Contribution 1233, 12 pp., printed, 1962. (Reprinted from Journal of Geophysical Research, vol. 67, no. 6, June 1962, pp. 2499-2508.) Woods Hole Oceanographic Institution, Woods Hole, Mass.

Corals and Sea Pens, Indicators of the Hydrological Profile and Caspian Fouling and Its Changes in the Past Ten Years (1951-61), by K. N. Nesis and G. B. Zevina, OTS 63-21646, 39 pp., printed, $1.25, April 23, 1963. (Translated from the Russian, Okeanologiya, vol. 2, no. 4, 1962, pp. 705-726.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 20235.

"The Delusion of 'Sea Level'," by D. E. Cartwright, article, New Scientist, vol. 20, no. 359, October 3, 1963, pp. 33-36, illus., printed. Cromwell House, Fulwood Pl., High Holborn, London WC1, England. Until recently mapmakers assumed that the mean level of the sea, observed at a chosen spot, provided a foolproof basis for measuring land heights. Now scientists know that sea level is influenced by a great variety of physical effects; even across the Straits of Dover there is a discrepancy of 8 cms.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

High Stability Seaborne Platforms for Range Instrumentation, by Samuel T. Carpenter, Report No. SR 35, 52 pp., printed, December 1961. Mitre Corp., Bedford, Mass.

Natural Coloring Matter as an Indicator of Inshore Water Masses, by Thomas L. Hopkins, Contribution No. 162, printed, October 1961. Oceanographic Institute, Florida State University, Tallahassee, Fla.

Oceanographic Research, Progress Report No. 6, January 1-December 31, 1962, 20 pp., printed, 1962. Lamont Geological Observatory, Palisades, N. Y.

Oceanographic Vessels of the World, vol. II, Publication G-2 in the NODC General Series, 417 pp., illus., processed, $4.50. National Oceanographic Data Center, Washington, D. C. This volume is essentially a continuation of the first volume of the same publication. Also includes photographs and plans of several of the unillustrated vessels in the first volume, errata to Vol. I, several ship specification revisions, and a revised ship index. Over 120 additional ships are described, including ships of 3 new countries, so that the 2 volumes now include over 300 ships belonging to 32 countries. It is planned to issue periodic supplements to keep this publication updated.

"Results of the IGY: Oceanography," by John A. Knauss, article, Science, vol. 142, no. 3590, October 18, 1963, pp. 418, 421, printed, single copy 35 cents. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW., Washington 5, D. C.

Soviet Oceanographic Research in the Mediterranean Sea, Indian and Atlantic Oceans, JPRS 12551, 27 pp., processed, February 19, 1962. (Translated from the Russian, Okeanologiya, vol. I, no. 4, pp. 745-761.) Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 20235.

OYSTERS:

First Supplementary List of Useful Publications for Oyster Farmers of the Maritimes, compiled by J. L. Hart, General Series Circular No. 41, 2 pp., printed, September 1963. Fisheries Research Board of Canada, Biological Station, St. Andrews, N. B., Canada.

"Modified Clam Dredge Does Excellent Job on Oysters," by Earl R. Brenner, article, National Fisherman/Maine Coast Fisherman, vol. 44, April 1963, pp. 34-35, printed. Journal Publishing Co., Belfast, Me.

"Observations on the Food Value of Seven Species of Algae to the Larvae of Ostrea edulis. I--Feeding Experiments," by P. R. Walne, article, Journal of the Marine Biological Association of the United Kingdom, vol. 43, no. 3, November 1963, pp. 767-784, illus., printed, single copy $12. Cambridge University Press, 32 E. 57th St., New York 22, N. Y.

PARASITES:

"A Myxosporidian (Sporozoan) Parasite in the Red Drum, Sciaenops ocellatus," by E. S. Iversen and Bernard Yokel, Contribution No. 487, 5 pp., illus., printed in English with Spanish summary. (Reprinted from Bulletin of Marine Science of the Gulf and Caribbean, vol. 13, no. 3, September 1963, pp. 449-453.) The Marine Laboratory, Institute of Marine Science, University of Miami, 1 Rickenbacker Causeway, Miami 49, Fla.

PERU:

La Pesqueria Peruana en 1962 (The Peruvian Fishery in 1962), by Javier Iparraguirre Cortez, Serie de Divulgacion Cientifica 23, 54 pp., illus., printed in Spanish. Departamento de Economia Pesquera, Servicio de Pesqueria, Ministerio de Agricultura, Lima, Peru. Discusses the rise of Peru as a fishing nation: the position of Peru in the world fisheries; domestic consumption; processed fishery products--investment and personnel, freezing, canning, fish meal and oil, and salted fish; fishery byproducts production; and coastal production of fish and shellfish by ports and by species. Also presents data on national byproducts production and consumption of food fish, domestic and imported; fish supply in Greater Lima; quantity and value of fishery products consumed in Greater Lima, by species and source; landings of fish on the coast and its utilization; foreign trade in fishery products; world production of fish meal, fish solubles, and fish body oil; and domestic landings of whales.

PESTICIDES:

Facts for Consumers, Pesticide Residues, FDA Publication No. 18, 14 pp., illus., printed, 15 cents, October 1963. Food and Drug Administration, U. S. Department of Health, Education, and Welfare, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Presents a summary of how the pesticide control system operates through 2 Federal laws: The Federal Insecticide, Fungicide, and Rodenticide Act (U. S. Department of Agriculture) and the Food, Drug, and Cosmetic Act (Food and Drug Administration). Also contains sections on setting safe tolerances, policing tolerances, the farmers' role, and other safety clearance requirements.

Pesticides, Public Health Service Publication No. 1081, 8 pp., printed, 5 cents, August 1963. Public Health Service, U. S. Department of Health, Education, and Welfare, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Describes briefly what pesticides are, their importance in health and food protection, and what the hazards are when they are improperly used. Also contains a brief discussion on programs the Public Health Service, together with other Federal agencies, is conducting in the study of the effects of pesticides on men, animals, plants, food, soil, air, and water; and gives a listing of safety rules to follow when using pesticides. Most pesticides available today are chemical poisons, and the pests they kill may be weeds, insects, rats and mice, algae, worms, or other destructive forms of life.

PHILIPPINES:

Foreign Trade Regulations of the Philippines, by Dawn A. Wachtel, OBR 63-138, 8 pp., printed, 15 cents. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) The need for foreign exchange to finance increasing import require-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

ments makes vital the Philippine Government policy to expand and diversify exports and export markets. This report discusses this trade policy, import tariff system, sales and other internal taxes, documentation and fees, and labeling and marking requirements. Also covers special customs provisions, nontariff import trade controls, Philippine export controls, United States foreign trade controls, and diplomatic representation between the two countries.

"Philippine Fisheries Investigations," article, Food Technology, vol. 17, June 1963, 86 pp., printed. The Garrard Press, 510 North Hickory, Champaign, Ill. Scientists are looking to the natural resources of Laguna de Bay, the largest lake in the Philippines, to help meet the protein needs of the country's rapidly growing population.

PHYSIOLOGY:
Physiological Adaptations of Fishes to New Conditions of Existence, by T. I. Privolnev, Translation Series No. 422, 10 pp., processed, 1963. (Translated from the Russian, Trudy Soveshchaniia Ikhtiologicheskoi Komissii Akademii Nauk SSSR, no. 3, 1954, pp. 40-49.)

POLLUTION:
Acid Mine Drainage, a Report Prepared for the Committee on Public Works, House of Representatives, by the Division of Water Supply and Pollution Control, Public Health Service, U. S. Department of Health, Education, and Welfare, 24 pp., illus., printed, April 19, 1962. Documents Room, House of Representatives, Washington, D. C.

The Position of the Food and Agriculture Organization with Respect to Water Pollution Control, Fisheries Biology Technical Paper No. 34, 8 pp., processed, 1963. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Water and Its Impurities, by Thomas R. Camp, 355 pp., illus., printed, $18, 1963. Reinhold Publishing Corp., 330 W. 42nd St., New York 18, N. Y.

POND FISHERIES:
Fish Pond Development Planning with the Help of Linear Programming, by Gonzalo J. Arroyo, Fisheries Papers no. 21, 21 pp., printed, 1962. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

POND FISHERIES:
"Fishpond Improvement," by J. A. Bozeman and Floyd Fessler, article, The Tennessee Conservationist, vol. XXIX, no. 11, November 1963, pp. 10-11, illus., printed. Game and Fish Commission, 264 Cordell Hull Bldg., 436 Sixth Ave. N., Nashville, Tenn.

"Many Factors Figure in Building of Successful Shrimp Pond," by S. F. Manning, article, National Fisherman/Maine Coast Fisherman, vol. 44, May 1963, pp. 38-39, printed. Journal Publishing Co., Belfast, Me.

"Prawn Ponds Yield Proteins for Singapore," article, New Scientist, vol. 17, March 21, 1963, p. 619, printed. Harrison, Raison and Co. Ltd., Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

Prudovoe Rybovodstvo (Pond Pisciculture--Textbook for Teachers at Agricultural Technical Schools), by S. M. Dorokhod and others, R.28475, printed in Russian, 1963. (Available on loan from the National Lending Library for Science and Technology, D.S.I.R., Boston Spa, Yorkshire, England.)

PREDATORS:
"Reproduction and Larval Development of the New England Clam Drill, Polinices duplicatus (Say) (Naticidae: Gastropoda)," by James E. Hanks, 1 p., printed. (Reprinted from Proceedings of the XVI International Congress of Zoology, Washington, D. C., August 20-27, 1963, vol. 1, p. 227.) Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn.

PRESERVATION:
"Fish Preservation Inquiries. III--Fisheries Products. Fish Sausages (2)," by A. R. Prater and W. A. Montgomery, article, Fisheries Newsletter, vol. 22, April 1963, pp. 25-26, printed. Commonwealth Fisheries Office, Dept. of Primary Industry, Canberra, Australia.

PROCESSING:
"Feeding for Fish Dressing (German Patent No. 900-221)," by R. T. Baader, article, Food Manufacture, vol. 38, June 1963, p. 346, printed. Leonard Hill Ltd., 9 Eden St., London NW1, England.

PROCESSING PLANTS:
Fish Working Premises - Materials and Design, by by J. J. Waterman. Torry Advisory Note no. 10, 7 pp., printed, 1963. Torry Research Station, 135 Abbey Rd., Aberdeen, Scotland.

QUALITY:
Increasing the Satisfaction from Fish and Shellfish, by Charles E. Eshbach and Kirby M. Hayes, Publication 387, 19 pp., illus., printed, August 1963. Cooperative Extension Service, College of Agriculture, University of Massachusetts, Amherst, Mass. The purpose of the leaflet is to present ways to select, store, prepare, cook, and serve fish so that the most satisfaction may be obtained from use of this highly nutritious food. Discusses selection at the retail counter, forms of fish available, how much to buy, edible percentages of various fish and shellfish, and seasonality of supply and price. Also covers grades of fish, handling and storage, nutritive values, preparation and cooking, and adding contrast in color and flavor.

RADIOACTIVE ISOTOPES:
Use of Radioactive Isotopes in Fishing Industry, USSR, by G. S. Karzinkin, OTS 63-31775, 79 pp., illus., printed, $2, September 17, 1963. Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 20235.

SALMON:
An Analysis of Gross Returns from Salmon Fishing in British Columbia by Seiners, Gillnetters, and Trollers for 1962, by B. A. Campbell and S. L. Young, 44 pp., printed, 1963. Department of Fisheries, Pacific Area, Vancouver, B. C., Canada.

"Chinook Salmon for the Selway," by Tom Welsh, article, Idaho Wildlife Review, vol. XVI, no. 3, November-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

December 1963, pp. 3-7, illus., printed. Idaho Fish and Game Commission, 518 Front St., Boise, Idaho. Presents a detailed explanation of the background and work being carried on to restore spring and summer-run Chinook salmon to the Selway River (a tributary of the Columbia River) drainage in north Idaho. In 1961, the State of Idaho began its program by means of eyed-egg plantings. Future plans call for the taking of about one million eggs annually for 8 years from fish removed from the ladders of Bonneville Dam on the Columbia River. In addition, about one million eggs will be taken annually from fish in the Salmon River drainage.

"A Feast and a Famine," article, Business Week, no. 1776, September 14, 1963, pp. 116-118, illus., printed, single copy 50 cents. McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Pink salmon in Alaska and Puget Sound were abundant in 1963, while the shortage of the choicer red salmon around Bristol Bay was the worst in 50 years, states the author. Washington State's Department of Fisheries ascribes the boom in pink salmon largely to severe restrictions in commercial and sports fishing in 1961, and to efforts to clear spawning streams of log jams and other manmade obstructions.

Information on the Biology of Pink Salmon Acclimatized in the Basins of the White and Barents Seas, by V. V. Azbelev, S. S. Surkov and A. A. Yakovenko, Translation Series No. 437, 4 pp., processed, 1963. (Translated from the Russian, Nauchno-tekhnicheskii Biulleten PINRO, no. 23 (20-21), 1962, pp. 37-38.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada.

Information on the Biology and Survival of Salmon of the Kola Peninsula, by V. V. Azbelev, Translation Series No. 440, 19 pp., processed, 1963. (Translated from the Russian, Trudy PINRO, no. 12, 1960, pp. 5-70.) Fisheries Research Board of Canada Biological Station, Nanaimo, B. C., Canada.

New Information on the Marine Period of Life and the Marine Fishery of Pacific Salmon, by I. B. Birman, Translation Series No. 357, 14 pp., illus., processed, 1962. (Translated from the Russian, Trudy Soveshchanii Ikhtiologicheskaia Komissiia Akademii Nauk SSSR, no. 10, 1960, pp. 151-164.) Fisheries Research Board of Canada Biological Station, Nanaimo, B. C., Canada.

Parasitic Diseases of Young Pacific Salmon in Fish Hatcheries of the Far East, by E. A. Bogdanova, Translation Series No. 391, 5 pp., processed, 1962. (Translated from the Russian, Nauchno-Tekhnicheskii Biulleten GosNIORKh, no. 11, 1960, pp. 49-52.) Fisheries Research Board of Canada Biological Station, Nanaimo, B. C., Canada.

"Potential Profits in the California Salmon Fishery," by Donald H. Frey, Jr., 12 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 4, October 1962, pp. 256-267.) Printing Division, Documents Section, Department of Fish and Game, N. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"Salmon Protection in Newfoundland," by J. J. Quigley, article, Trade News, vol. 16, no. 4, October 1963, pp. 3-4, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada.

Sport Fishing for Pacific Salmon, by Harry W. Howard, 153 pp., illus., printed, 1954. Koke-Chapman Company, Eugene, Oreg.

SALMON AND TROUT:

Scottish Salmon and Trout Fisheries; First Report by the Committee Appointed by the Secretary of State for Scotland, Cmnd. 2096, 58 pp., printed, 1963. Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland.

SANITATION:

"Shellfish Chief Outlines Sanitary Control System," by Eugene T. Jensen, article, National Fisherman/ Maine Coast Fisherman, vol. 44, June 1963, pp. 34, 39, printed. Journal Publishing Co., Belfast, Me.

SARDINES:

Sardine Fishery for Victoria, by D. D. Lynch, Fisheries Circular No. 9, 2 pp., illus., printed. (Reprinted from Victoria's Resources, vol. 4, no. 3, September-November 1962.) Fisheries and Wildlife Department, 605 Flinders St., Melbourne C3, Australia.

SCALLOPS:

Notes on a Scallop Fishery: A Guide for Development in Victoria, by D. D. Lynch, Fisheries Contribution No. 13, 18 pp., illus., processed, October 1963. Fisheries and Wildlife Department, 605 Flinders St., Melbourne C3, Australia.

SHELLFISH:

Cooperative Program for the Certification of Interstate Shellfish Shippers. Part I--Sanitation of Shellfish Growing Areas. Part II--Sanitation of the Harvesting and Processing of Shellfish, 66 pp., printed, 1962. U. S. Public Health Service, Department of Health, Education, and Welfare, Washington, D. C., 20201.

SHRIMP:

"FAO Prawn Breeding Problem," article, Food Technology, vol. 17, May 1963, pp. 54, 56, printed. Council of Australian Food Technology Associations, Inc., 12 O'Connell St., Sydney, Australia.

"Sound Production in the Snapping Shrimps Alpheus (Crangon) and Synalpheus," by Robert E. Knowlton and James M. Moulton, article, The Biological Bulletin, vol. 125, no. 2, October 1963, pp. 311-331, illus., printed, single copy $2.50. Marine Biological Laboratory, Woods Hole, Mass.

SMALL BUSINESS MANAGEMENT:

Advertising in International Markets, by Harry C. Thompson, Management Aid for Small Manufacturers No. 160, 4 pp., processed, January 1964. Small Business Administration, Washington, D. C., 20416. A report on the use of the valuable and final tool of advertising in overseas selling. International advertising supports overseas marketing by selling products directly to users, obtaining channels of distribution, fostering government-business relations establishing foreign credit and obtaining a good press in foreign countries. Small businessmen are urged to consult an advertising agency before initiating foreign advertising. Goals in overseas advertising

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

should be carefully defined. Media choices include United States magazines with foreign circulation, international periodicals, international trade papers, local language newspapers and magazines, international television and radio broadcasting, and movies. Costs of foreign advertising are discussed and a reference list of periodicals is included in the report.

Bank Loan Limitations: Living Within Them, by Robert K. Landrum, Management Aid for Small Manufacturers No. 158, 4 pp., processed, November 1963. Small Business Administration, Washington, D. C., 20416. Loan limitations and restrictions are designed to protect the lender against unnecessary risks. Knowing the reasons for limitations can help small business owners in understanding the nature of loan limitations as set by banks and other private lenders. Describing the loan agreement, the leaflet points out that limitations and restrictions can help the owner-manager. For example, the loan agreement protects him on his rate of repayment. Also, attention is called to the importance of keeping the lender informed about changes--good or bad--in the condition of the borrowers' business.

How Small Utah Firms Get and Keep Their Employees, by Reed C. Richardson and Barbara S. Stubblefield, Management Research Summary, 2 pp., processed, 1963. Small Business Administration, Washington, D. C., 20416. Recruiting sources most widely used by the 1,000 firms studied were: (1) referrals, (2) the State Department of Employment Security, (3) newspaper advertising, and (4) unsolicited applications. In general, the firms relied on personal interviews and statements from former employers rather than on more formal screening devices in selecting employees. Good employer-employee relations were rated the best single approach to reducing turnover.

Tax Compliance Costs in Small Firms, by Fred J. Mueller, Management Research Summary, 4 pp., processed, 1963. Small Business Administration, Washington, D. C., 20416. Businesses in all but 4 of 38 states having sales, use, and gross-receipts taxes serve essentially as tax-collection agents for the tax authority--in the majority of cases without reimbursement for the costs incurred. About two-thirds of the 34 states levying income taxes require withholding by the employer. The report showed that compliance by the study firms with regulations covering Federal payroll taxes required an average of 9.3 hours per employee per year. Collection of sales taxes from the customer required an average of 20 seconds a transaction; recording, reporting, and remitting required a total of 8.1 hours per year.

SMELT:

"Introduction of Pond Smelt from Japan into California," by Joseph H. Wales, 2 pp., printed. (Reprinted from California Fish and Game, vol. 48, no. 2, April 1962, pp. 141-142.) Printing Division, Documents Section, Department of Fish and Game, N. Seventh St. at Richards Blvd., Sacramento 14, Calif.

SOUTH AFRICA REPUBLIC:

Department of Nature Conservation, Report No. 19, 1962, 142 pp., illus., printed. Department of Nature Conservation, Provincial Administration of the Cape of Good Hope, Cape Town, South Africa Republic. A section on accomplishments of the Division of Inland Fisheries discusses the Jonkershoek Fish Hatchery, Pirie Trout Hatchery, and stocking of public waters. Also covers tidal waters, report on investigational work on Tilapia mossambica, and eradication of undesirable water plants.

SOUTH ATLANTIC:

"Fishing Expeditions in the Southern Atlantic," by V. Paz-Andrade, article, Fishing News International, vol. 2, January-March 1963, pp. 71-73, printed. A.J. Heighway Publications Ltd., 110 Fleet Street, London EC4, England.

SPAIN:

Establishing a Business in Spain, OBR 63-140, 12 pp., printed, 15 cents, November 1963. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Information of importance to Americans contemplating establishing a business in Spain is presented in this report. Since 1959 the Spanish Government has taken a number of steps toward a greater liberalization of foreign capital investments. These have included removal of restrictions on foreign ownership of Spanish companies and on the transfer abroad of earnings and the repatriation of capital. The report covers investment factors such as Spanish Government regulations on foreign investments, real estate purchases and investments, National Institute of Industry, mining legislation, treaty relations with United States, repatriation of capital and profits, and foreign trade policy. Also discusses business organization--types of organizations, the mercantile register, notaries fees and other charges, and industrial property protection; laws affecting employment--employment of aliens, syndicalism, and labor provisions; and tax system.

"Evolucion de la Industria Pesquera Espanola" (Growth of the Spanish Fishery Industry), by Agustin de Barcena y Reus, article, Boletin de Informacion, nos. 59-60, August-September 1963, pp. 3-5, printed in Spanish. Sindicato Nacional de la Pesca, Paseo del Prado, 18-20, 6.ª Planta, Madrid, Spain.

"La Pesca Espanola en Cifras" (The Spanish Fishery in Figures), by Alevin, article, Industria Conservera, vol. XXIX, no. 290, pp. 211-212, printed in Spanish. Union de Fabricantes de Conservas de Galicia, Calle Marques de Valladares, 41, Vigo, Spain.

SPINY LOBSTER:

The Status of the Florida Spiny Lobster Fishery, 1962-63, by Richard K. Robinson and Dolores E. Dimitriou, Technical Series No. 42, 30 pp., illus., printed, August 1963. Florida State Board of Conservation, W.V. Knott Bldg., Tallahassee, Fla.

STERN TRAWLERS:

"Stern Trawling with the 'Netzsonde'," article, World Fishing, vol. 12, June 1963, pp. 70-71, printed. John Trundell Ltd., St. Richards House, Eversholt Street, London NW1, England. Describes use of headline echo-sounders which have a transducer fitted to the trawl.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

STORAGE LIFE:
"The Storage Life of Frozen Foods," by G. C. Walker, article, Food Preservation Quarterly, vol. 23, no. 1, March 1963, pp. 20-21, printed. Commonwealth Scientific and Industrial Research Organization, Division of Food Preservation, P. O. Box 43, Ryde, N.S.W, Australia.

SUSQUEHANNA RIVER:
"Susquehanna River Fish Pots," by John M. Hershour, article, Pennsylvania Angler, vol. 32, no. 12, December 1963, pp. 2-6, illus., printed, single copy 25 cents. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa.

SWORDFISH:
"Swordfishing in Newfoundland," article, Trade News, vol. 16, no. 4, October 1963, p. 10, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. The Atlantic Coast's newest large-scale commercial fishery, long-line swordfishing, is having considerable success in Canada. The Newfoundland Department of Fisheries experimental and demonstration vessel Beinir landed 293 swordfish at a processing plant in Harbour Grace.

TAGGING:
"A New Method of Attaching Peterson Disk Tags with Monofilament Nylon," by John E. Randall, 5 pp., illus., printed. (Reprinted from California Fish and Game, vol. 42, no. 1, January 1956, pp. 63-67.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

TRANSPORTATION:
Some Problems in the Transport of Frozen Food, by D. L. Nicol, Torry Memoir No. 414, 6 p., processed, 1963. Torry Research Station, 135 Abbey Rd., Aberdeen, Scotland.

The Use of Anesthetics for the Handling and the Transport of Fishes, by William N. McFarland, 25 pp., printed. (Reprinted from California Fish and Game, vol. 46, no. 4, October 1960, pp. 407-431.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

TRAWLERS:
"Cathodic Protection of Trawlers Against Corrosion Damage," by M. G. Duff, article, Fishing News International, vol. 2, January-March 1963, pp. 65-67, printed. A. J. Heighway Publications Ltd., 110 Fleet Street, London EC4, England.

TRAWLING:
"Construction and Operation of a Small Boat Trawling Apparatus," by Wayne J. Baldwin, 9 pp., illus., printed. (Reprinted from California Fish and Game, vol. 47, no. 1, January 1961, pp. 87-95.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"New Electro-Pneumatic Towing Block," article, Canadian Fisherman, vol. 50, May 1963, pp. 31,34, printed. National Business Publications Ltd., Gardenvale, Que., Canada.

TRAWLS:
"Les Engins de Peche--L'Ouverture Verticale du Chalut" (Fishing Gear--The Vertical Opening of the Trawl), by A. Percier, article, France Peche, no. 77, October 1963, pp. 33-36, 38, illus., printed in French, single copy 2.5 F (about 50 U.S. cents). France Peche, Boite Postale 179, Lorient, France.

"Gallows Blocks from Norway," article, World Fishing, vol. 12, June 1963, p. 130, printed. John Trundell Ltd., St. Richards House, Eversholt Street, London NW1, England.

Trawling Gear in California, by W. L. Scofield, Fish Bulletin 72, 63 pp., illus., printed, 1948. Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

TREATIES:
Declaration of Understanding Regarding the International Convention for the Northwest Atlantic Fisheries, Washington, April 24, 1961, Treaty Series No. 71, printed, 1963, 20 cents. British Information Services, 845 3rd Ave., New York 22, N. Y.

TROPICAL FISH:
"Florida's Fabulous Fish Industry," by John W. Anderson, article, The Aquarium, vol. 32, no. 11, November 1963, pp. 3-5, illus., printed, single copy 40 cents. The Aquarium Publishing Co., Box 832, Norristown, Pa., 19404.

TROUT:
Brown Trout; its Life History, Ecology and Management, by O. M. Brynildson and others, Publication No. 234, 15 pp., printed, 1963. Wisconsin Conservation Department, Madison, Wis.

"Report Cottonseed Meal Causative Factor in Liver Cancer in Fish," article, Feedstuffs, vol. 35, June 1, 1963, p. 76, printed. Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

Some Effects of Impoundment on the Environment and Growth of Brown Trout (SALMO TRUTTA L.) in Loch Garry (Inverness-shire), by R. N. Campbell, Freshwater and Salmon Fisheries Research, No. 30, 27 pp. illus., printed, $2.10, 1963. British Information Services, 845 3rd Ave., New York 22, N. Y.

"Trout Survival in Taylor Creek, a Tributary of Lake Tahoe, California," by Garth I. Murphy, 4 pp., printed. (Reprinted from California Fish and Game, vol. 49, no. 1, January 1963, pp. 16-19.) Printing Division, Documents Section, Department of Fish and Game, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

TUNA:
"Economic Potential of Australian Tuna," by D. J. Hardman, article, Fishing News International, vol. 2, no. 138, April-June 1963, pp. 140-141, printed. A. J. Heighway Publications Ltd., 110 Fleet Street, London EC4, England.

"The 1960 Preseason Albacore Survey in the Northeastern Pacific Ocean," by William L. Craig and Robert H. Caneday, 20 pp., illus., printed. (Reprinted from California Fish and Game, vol. 48, no. 3, July 1962, pp. 179-198.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento, Calif.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"La Pesca del Atun en los Mares del Globo" (The Tuna Fishery in the Seas of the World), article, Industrias Pesqueras, vol. XXXVII, no. 872, August 15, 1963, p. 335, printed in Spanish, single copy 40 ptas. (about 70 U. S. cents). Industrias Pesqueras, Policarpo Sanz, 21-2°, Vigo, Spain.

"The Schooling Behavior of Pacific Yellowfin and Skipjack Tuna held in a Bait Well," by James Joseph and Izadore Barrett, 1 p., printed. (Reprinted from California Fish and Game, vol. 49, no. 1, January 1963.) Printing Division, Documents Section No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"Tuna Longlining: Results of a Cruise to the Eastern Tropical Pacific Ocean," by Robert C. Wilson and Bell M. Shimada, 8 pp., illus., printed. (Reprinted from California Fish and Game, vol. 41, no. 1, January 1955, pp. 91-98.) Printing Office, Documents Section. No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

"Tuna Seining in the Atlantic," by G. J. Gillespie, article, Trade News, vol. 16, no. 5-6, November-December 1963, pp. 3-5, 17, illus., processed. Information and Consumer Service, Department of Fisheries, Ottawa, Canada. Canadian maritime fishing history was made at Wilson's Beach, Campobello Island, New Brunswick, in the late summer and early fall of 1963 when 2 vessel captains initiated the first tuna-seining operation ever undertaken in the Atlantic coastal provinces. In 5 trips to fishing grounds off the New England coast and near Block Island, the 2 vessels landed more than 700,000 pounds of tuna, mostly bluefin. The tuna were unloaded at Wilson's Beach, then trucked to a cannery at Eastport, Maine. The project was jointly sponsored and financed by the Industrial Development Service of the Canadian Department of Fisheries and the newly-formed New Brunswick Department of Fisheries. The venture so far is strictly experimental and plans call for operations over a 3-year period.

TUNA AND MACKEREL:
"The Names of Tunas and Mackerels," by Phil M. Roedel, 1 p., printed. (Reprinted from California Fish and Game, vol. 49, no. 2, April 1963.) Printing Division, Documents Section, No. Seventh St. at Richards Blvd, Sacramento 14, Calif.

TURKEY:
Balik ve Balikcilik (Fish and Fishery), vol. XI, no. 11, November 1963, 35 pp., illus., printed in Turkish with English table of contents. Et ve Balik Kurumu G. M., Balikcilik Mudurlugu, Besiktas, Istanbul, Turkey. Includes, among others, articles on: "Some Chemical Aspects about the Bonito and Horse Mackerel which Are Caught in Our Waters;" and "Basic Researches in Inland Waters."

Investment Factors in Turkey, by Barbara H. Hise, OBR 63-137, 12 pp., printed, 15 cents, November 1963. Bureau of International Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) Factors to be considered by potential United States investors in Turkey. Covers scope of private foreign investment, fields for private foreign investment and enterprise, Government policy toward foreign investment, Government controls over industry, and screening of investment proposals. Also includes information on taxation, financing facilities, labor conditions, investment counseling, foreign investment encouragement law, and handling of foreign capital brought into Turkey.

UNDERWATER EXPLOSIONS:
"Observations on the Effect of Black Powder Explosions on Fish Life," by Donald H. Fry, Jr. and Keith W. Cox, 4 pp., printed. (Reprinted from California Fish and Game, vol. 39, no. 2, April 1953, pp. 233-236.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

Report on Experiments Designed to Determine Effects of Underwater Explosions on Fish Life, by Carl L. Hubbs and Andreas B. Rechnitzer, 34 pp., illus., printed. (Reprinted from California Fish and Game, vol. 38, no. 2, July 1952, pp. 333-366.) Printing Office, Documents Section, No. Seventh St. at Richards Blvd., Sacramento 14, Calif.

UNDERWATER PHOTOGRAPHY:
La Photographie Sous-Marine Profonde et Son Exploitation Scientifique (Deep-Sea Underwater Photography and its Scientific Use), by Andre Laban, 32 pp., Bulletin No. 1258, processed, 1963. Institut Oceanographique, Musee Oceanographique, Monaco-Ville, Monaco.

UNITED ARAB REPUBLIC:
Foreign Trade Regulations of the United Arab Republic, by Roger D. Severance, OBR 63-143, 8 pp., printed, 15 cents, December 1963. Bureau of International Commerce, U. S. Department of Commerce, Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402.) The trade policy of the United Arab Republic is intended to maximize the use of monetary resources for the implementation of the economic development program of the country. The report covers import tariff system, documentation and fees, labeling and marking requirements, and special customs provisions. Also includes information on nontariff import trade controls, export controls, United States foreign trade controls, and diplomatic representation between the two countries.

UNLOADING:
A New Method for Pumping Fish, by S. W. Roach, F. G. Claggett, and J. S. M. Harrison, 3 pp., illus., printed, 1963. Fisheries Research Board of Canada, Technological Research Laboratory, Sir Charles Tupper Bldg., Riverside Dr., Ottawa, Canada.

U.S.S.R.:
"Searching the Oceans," by A. G. Koganovsky, article, Fishing News International, vol. 2, April-June 1963, p. 197, printed. A. J. Heighway Publications Ltd., 110 Fleet Street, London EC4, England.

WHALES:
"An Improved Method for Collection of Ear Plugs from Baleen Whales," by Hideo Omura, article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 52, no. 10, October 1963, pp. 279-283, illus., printed in Norwegian and English. Norsk Hvalfangst-Tidende, Sandefjord, Norway.

BAKED HALIBUT TOPPED WITH FRENCH FRIED ONION RINGS OFFERS AN UNUSUAL SEAFOOD TREAT

Created in the Test Kitchens of the U. S. Department of the Interior's Bureau of Commercial Fisheries, this sparkling seafood recipe calls on halibut to provide easy economy and easy elegance for today's imaginative homemaker.

The natural hearty flavor of halibut steaks complemented with just a hint of lemon's tartness and baked under a crispy topping of french fried onion rings and tangy Parmesan cheese offers an exciting entree suggestion to grace the Lenten table.

Wholesome, meaty halibut steaks are in good supply in markets throughout the United States all through the year and versatile homemakers will find popular halibut a winner at mealtime.

Baked halibut surprise.

BAKED HALIBUT SURPRISE

- 2 pounds halibut steaks or other fish steaks, fresh or frozen
- ½ cup French dressing
- 2 tablespoons lemon juice
- ¼ teaspoon salt
- 1 can (3½ ounces) french fried onions
- ¼ cup grated Parmesan cheese

Thaw frozen steaks. Cut into serving-size portions. Place fish in a shallow baking dish. Combine dressing, lemon juice, and salt. Pour sauce over fish and let stand for 30 minutes, turning once. Remove fish from sauce and place in a well-greased baking dish, 12 x 8 x 2 inches. Crush onions. Add cheese and mix thoroughly. Sprinkle onion mixture over fish. Bake in a moderate oven, 350° F., for 25 to 30 minutes or until fish flakes easily when tested with a fork. Serves 6.

From Special Fisheries Marketing Bulletin: "Heirloom Seafood Recipes to Treasure."

k-
nd
ed
n-
es